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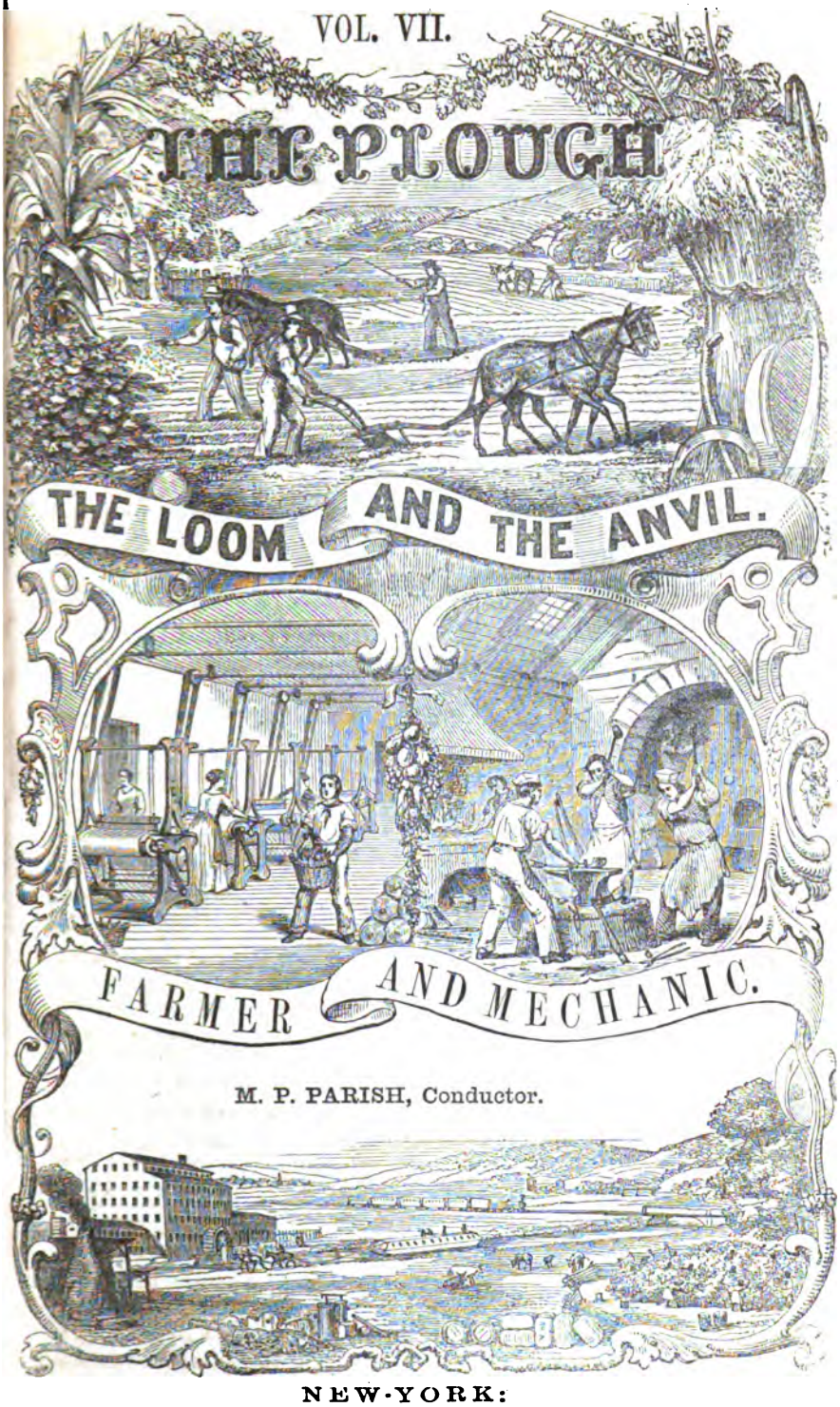

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From July, 1854, to June, 1855.

THE reader will please note the divisions of the Index of this volume, as divided according to the arrangement of the articles under its general heads. The first is of treatises in the body of the work. The second includes what is treated of in the Miscellaneous, Editorial Jottings, and the Mechanical Record. The third is an index to American Patents, and the fourth to English Patents. Reference is made sometimes to the same topic under several of these divisions. If a particular title is not found in one it may be in another.

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No. 1. July, 1854. Vol. 7.

THE PLOUGH

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State Agricultural Rooms, Albany, Feb. 20, 1854.

At the Show of the Society, held at Buffalo, in September last, a *Cattle-weighing Machine* was erected by Messrs. T. & B. F banks & Co., of St. Johnsbury, Vt. The Scales of Messrs. Fairbanks were selected as most likely to give satisfaction to the ex itors of fat cattle. The judges appointed on miscellaneous articles awarded the first premium of the Society for the mach which was erected by them,—and the judges on fat cattle, who superintended the weighing of all cattle exhibited, expressed t approbation of the great accuracy of the machine. BENJ. P. JOHNSON, Cor. Secretary.

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BIOGRAPHICAL NOTICE OF JOHN S. SKINNER.

BY BEN. PERLEY POORE.

JOHN STUART SKINNER is one of those names which should not pass away without some embalming token of grateful recollection. The pioneer of the American agricultural press—the champion of those who nobly toil at "the plough, the loom, and the anvil"—the faithful government officer—the spotless citizen—the true friend and the kind relative, Col. Skinner's eminent talents and useful life merit a record, even though it must of necessity be brief. Imperfect as the following biographical sketch may be, it is dictated by the deepest conviction that it chronicles the labors of one to whom the republic remains deeply indebted. The materials, generally speaking, were obtained during a long acquaintance with Col. Skinner, and are now gladly contributed to a demonstration of respect to his memory, so blended with a tribute to the widowed partner of his unrewarded career, as to render the testimonial more than the customary oblation of cold, posthumous honor. Respected, esteemed, and loved during life, Col. Skinner's name has passed the stern ordeal of the grave with imperishable lustre, while his virtues "smell sweet, and blossom in the dust."

Robert Skinner, an English country gentleman of considerable fortune, was one of the first settlers of Maryland, when that colony was founded, at the commencement of the seventeenth century, by the estimable Sir George Calvert, *Lord* Baltimore. The domain selected by the colonists is still owned by one of his descendants, and occupies a desirable position on the peninsula between the Pawtuxent River and Chesapeake Bay. It contains about six hundred acres of land, well adapted to the culture of tobacco. The adjoining plantation, belonging to the Johnson family, was the birth-place of Governor Johnson, (the ancestral relative of Mrs. John Quincy Adams,) and also of Mrs. Zachary Taylor.

Frederick Skinner, (great-grandson of Robert, and father of John Stuart Skinner,) is described as a gentleman of strongly-marked character—equally noted for his prompt decision, his old-fashioned common-sense, his mechanical ingenuity, and his open-hearted benevolence. Early in the Revolution, he received a commission in the "Maryland Line," and he performed good service in the regiment of light troops known as the "flying-camp." After independence was secured, Mr. Skinner gave his undivided attention to agriculture, cultivating his ancestral estate, and also another tract of about seven hundred acres of land, nearer the court-house of Calvert county. This was the marriage-portion of his wife, who was a daughter of Captain Stuart, an ardent Whig, whose ship-yard on West-River, Md., with vessels on the stocks, was burned by the British during the revolution. One of her brothers, Stephen Stuart, Esq., was a merchant of distinction in the early days of Balti-

more's commercial prosperity. Another, John, or, (as he was called by his soldiers,) "Jack" Stuart, was a gallant, though somewhat reckless officer in the revolution, serving throughout the struggle with such courage and zeal as to win the commendation of his comrades, especially the heroic La Fayette. He was especially distinguished at the recapture of Stony-Point, where (by especial request of General Wayne) he commanded the volunteers who headed the left division of the storming party. Congress voted him a medal for his bravery in this action, which was afterward presented to his heirs by President Washington. One of the emblematical devices represented Colonel "Jack," barefooted, as he actually clambered up the parapet.

John Stuart Skinner (named after his uncle) was born on the 22d day of February, 1788, and was reared upon his father's plantation. Often have we heard him relate, with particular yet mournful zest, his juvenile labors in picking cotton, or pulling blades, or journeying on a "tackey" with leather to the shoemaker, yarn to the weaver, or cloth to the tailor. Tobacco and corn were his father's staple crops, but it was the old gentleman's rule to raise every thing used on his plantation, with the exception of iron, sugar, and coffee. The lad thus became acquainted with the practical details of spinning, weaving, tanning, distilling, milling, and blacksmithing, all of which were carried on at his home. This impressed his mind, at an early age, with the axiom that all industrial pursuits incline to cluster around the plough, and that agriculture prospers as other occupations yield to its attraction. Among other excellent works put into his hands by his father, was a pamphlet showing the exhausting tendency of shallow ploughing, written by a strong-minded Quaker, named Moore. It first led him to regard agriculture as an intellectual pursuit, replete with philosophy, and susceptible of being improved by the application of science.

After acquiring the rudiments of education at the county-schools taught on his father's or some neighboring estate, young Skinner was sent as a pupil to Charlotte-Hall, St. Mary's county, one of the best classical academies in Maryland. At the age of eighteen, he was placed in the office of the clerk of the county court, and while there, engaged in transcribing legal documents, was invited to read law at Annapolis, with Chancellor Johnson, father of the Hon. Reverdy Johnson. A similar invitation from Judge Allen Duchet induced his father to send him to Annapolis, and soon after his arrival these eminent lawyers secured his appointment as reading-clerk to the Legislature. The next year, Gov. Wright appointed him Notary Public for the city of Annapolis, overcoming objections made by some of the councillors on the ground that he was yet in his minority, and consequently ineligible. What others learned by experience, the young student appeared to see by intuition, and his father was soon frequently gratified to hear veteran members of the bar compliment the ability of his son. As was anticipated, he passed a triumphant examination, although his public duties had occupied much of his time, and at the age of twenty-one he commenced practice as a counsellor and attorney.

On the 10th of March, 1812, Mr. Skinner married Miss Elizabeth G. Davies, a step-daughter of Chancellor Bland. This he ever regarded as the happiest event of his life, retaining for the bride of his youth "that love which is peculiar to men of strong minds—men whose affection is not easily won or widely diffused." It was well merited, for while she adorned his domestic hearth by her virtues and her accomplishments, she steadily encouraged him in his self-sacrificing literary career. More lucrative paths were frequently opened to him, and she saw his early professional associates accu-

mulate fortunes, but she never murmured as he toiled on unrewarded in his noble mission. Exhibiting that heroic virtue which sacrifices private interests to the public good, Mrs. Skinner merits the substantial gratitude of those who walk in her lamented husband's footsteps, and who profit by his thirty years' unrequited labor in laying a stable foundation for our national prosperity. During nearly forty years, Mr. and Mrs. Skinner furnished an interesting picture of conjugal felicity, united, not only in affections and interests, but in tastes and inclinations. To the associates of their youth their married life was a pleasant remembrance; to their younger friends, (and few had more,) it was a source of admiration. All sincerely mourned when this ripened garland of hymeneal intercourse was snapped—when the devoted wife was smitten with sudden gloom, like the visitation of an eclipse—when this happy social picture was dashed by an Almighty hand into a portrait of premature loneliness—for "one was taken and the other left."

Soon after the declaration of war, the young lawyer was called into a new sphere of action. The intercourse by mail between Europe and the United States was carried on by means of British mail-packets—gun-brigs, which plied monthly between New-York and Falmouth. Instead of stopping this channel of communication, the United States government required the packets to make Annapolis their American port, and Mr. Skinner was appointed agent to look after them. It was his duty to receive and forward the mails, to furnish the vessels with necessary supplies, and to see that nothing transpired prejudicial to the interests of the republic, or offensive to enemies thus admitted under the guardianship of a flag of truce. It was an altogether new, delicate, and responsible trust, for which President Madison himself framed a commission, and selected Mr. Skinner to execute it.

A few weeks later, he was appointed agent for prisoners of war, upon the nomination of General John Mason, commissary-general of prisoners. The two offices were attached to the Department of State, with a salary of $1800 per annum, and he gave great satisfaction to the government. Always alive to a sense of duty, he never faltered in nor shrunk from the performance of it. Even the British officers were captivated by his generous nature, and with several of them official courtesies ripened into friendships which lasted through life.

In the fall of 1813, Mr. Skinner was ordered to remove his offices to Baltimore, and before he was fairly established there, he was offered a purser's commission by the Secretary of the Navy. This unexpected honor he at first declined, having no taste for a nautical life, and supposing that at any moment he would be liable to be ordered to sea. But he accepted, on being informed that the object of the government in appointing him was to secure his services at Baltimore, where two sloops-of-war and a flotilla of gun-boats were being fitted out. When the flotilla was equipped, the expenditures were very heavy, as Commodore Barney had upward of a thousand men under his command, but Mr. Skinner performed his arduous duties to the end of the war, and for years afterward, to the entire satisfaction of the government, as well as its accounting officers. He was frequently detailed to act as judge advocate on courts-martial, and won the warm friendship of the gallant defenders of our flag in that hour of peril.

At the approach of the British forces upon Washington, Mr. Skinner rode ninety miles in the night, and first announced to the government their march, after having warned Commodore Barney previously of their hostile intentions. By way of retaliation, the "red-coats" burned the valuable buildings on his St. Leonard's-creek estate, for which he never sought any reïmburse-

ment from Government, although compensation was granted for property destroyed on a neighboring plantation, at the same time, and by the same forces.

A few weeks later, Mr. Skinner went down the bay on an official visit to Admiral Cockburn, to negotiate for the exchange of some gentlemen who had been captured from their plantations. He was accompanied by the accomplished Francis S. Key, Esq., and they of course sailed under a flag of truce. But on reaching the British squadron, they found the enemy on the point of sailing to attack Baltimore, and they were politely informed that they could not return "until the city was taken." Meanwhile, they would be welcome on board the flag-ship, or could remain on board the yacht in which they came, on "parole." Choosing the latter, the British commander took away their sails, and sent a guard of sailors on board of the yacht. Here Mr. Skinner and his friend remained during the bombardment of Fort McHenry, to the annoyance of their guard, who wished to desert, but were restrained by the "prisoners." The British not succeeding in their attempt, the gentlemen had their sails restored, and were permitted to return to Baltimore, with apologies for their detention. Immediately on landing, they went to the old "Fountain Inn," on High street, where Mr. Key wrote that justly-admired song, the "Star-spangled Banner." It was a literal description of their feelings during the night of the bombardment, when the rockets and the bombs betokened the assaults of the enemy, and of their patriotic joy when in the gray light of early dawn they saw the starry ensign waving in proud defiance. Mr. Skinner, ere the song was completed, saw its beauties, and obtaining Mr. Key's permission to have it published, took copies of it to the printing-offices of the morning papers. Ere long, it resounded through the republic like a recovered echo of Thermopylæ—its stirring notes, (like those of the Marseillaise hymn in France) finding an accompaniment in the throbbings of every American heart.

In 1816, (being still and for years after purser on the station,) President Madison appointed Mr. Skinner postmaster of Baltimore, then the third city in the Union. This office, which was one of labor and of high responsibility, he held for twenty-three years, when he was removed by President Van Buren, in accordance with his "system." Meanwhile he declined a territorial judgeship from Mr. Madison, and the post of Secretary of State of Arkansas from his warm personal friend Mr. Munroe. Messrs. Adams and Jackson each honored him with the appointment of visitor of the West-Point Academy, and his re-nomination as postmaster of Baltimore by the latter, just before his term expired, was unanimously confirmed by the Senate.

Agriculture, at this period, was at a low ebb in the Middle States. After the conflicting armies of Europe, wearied with the conflict, had turned their swords into plough-shares, the prices of American bread-stuffs naturally declined. The soil, too, was becoming gradually exhausted, especially in Maryland, whose tobacco crops had paid so many of the drafts for foreign supplies during the revolution. No other commonwealth in the world is so beneficially bounded and indented by navigable water—or so abounds in calcareous and other rich fertilizing substances—or is so capable of easy culture and recuperation. Yet in a few years after the silver-toned trumpet of peace echoed along her shores, Maryland fell into an agricultural paralysis. As her sons grew up, they moved away to "wear out" in its turn the fertile prairies of the West, and the old homestead mansions, often sadly out of repair, were swarming with old maiden daughters, many of them so beautiful and so excellent that no change could have improved them—save a change of name.

An ardent lover of his native State, and sensibly alive to her stagnant condition, Mr. Skinner had the sagacity to foresee that a continuation of this position of things must be productive of consequences not only ruinous but destructive. An able series of papers signed "Avator," (from the pen of Col. John Taylor, of Carolina,) led him to investigate the subject, and the avidity with which these essays were read, when re-published in book form, edition after edition, led him to conceive the idea of establishing an agricultural paper. Happy thought! Every political party, every religious sect, every prominent business locality used the mighty engine of civilization—but the farmers, that immense majority of citizens, had no "organ." In supplying this want, Mr. Skinner supplied the first germ of modern agriculture, which thenceforth began to soar up, phœnix-like, from the ashes of a wrong popular judgment.

The *American Farmer* was pronounced by all an excellent title, and after long consultations with Mr. Joseph Robinson, the printer, nothing was wanting but a "motto," then considered an indispensable part of a newspaper heading. Just then, Mr. Skinner met at a hospitable dinner-table a clergyman from the Green Isle, who was well versed in classical lore. His aid was solicited, and he promptly replied: "Och sir, yes! you may give them from Virgil, '*O fortunatos nimium sua si bona norint agricolas.*'" The motto was approved, and has been retained to this day.

Number one of the new paper appeared on Friday, the second day of April, 1819, the date having been changed from the *first*, in fear that it might be ridiculed as an "April-fool" enterprise. It was a neatly printed quarto sheet of eight pages, each page measuring nine inches by eleven. It was illustrated with an engraving of the ox "Columbus," and contained interesting articles on rural economy, amusements, etc., etc., with a "summary of intelligence," and a "price current." "The editor," says the conclusion of the introductory leading article, "is aware that 'to *promise* is most courtly and fashionable;' he will therefore only add that the *American Farmer* will be conducted on broad and liberal principles, containing nothing indecorous or personally offensive to the feelings or character of any sect or individual. And further, that if at the end of the year, any subscriber should think he has not received his 'penny'orth,' he shall be at liberty to withdraw, and his subscription money shall be repaid to him on demand."

The *American Farmer* at once gained a respectable list of subscribers at $4 per annum, and, as it was at first deemed hazardous to print more than five hundred copies, it was necessary to reprint a portion of the first volume three times, in order to answer the demands of new patrons, who wished complete sets. The editor devoted every leisure moment to its columns, and was soon ably seconded by a phalanx of the most enlightened agriculturists in the country. Among these were Col. Taylor, Thos. Jefferson, Timothy Pickering, Gen. Armstrong, Col. Lloyd, G. W. P. Custis, Caleb Kirk, and others of great ability.

Cobbett, at this time, was farming on Long-Island, and Mr. Skinner published several able articles from his pen on Ruta Baga, seed of which "the Radical" sent to Baltimore by his man-servant, and sold in considerable quantities. The culture of rape, and the introduction of the Bactrian camel, were also among the first new ideas promulgated, and the volume was illustrated with engravings often costing $40 to $50.

The editorial labors of Mr. Skinner were mostly performed in the evening, for it would not have answered had he neglected his postal duties, nor did any out of his family know how diligently he toiled, late into the night. He

soon informed his readers that they "must not expect light ephemeral speculations and essays, cooked up to satisfy the ever-craving appetites of newsmongers and politicians; the science of agriculture is difficult; the very nature of its operations laborious and enduring through the whole year; it is to be expected therefore that essays treating of the vegetation, growth, and management of a single object, will often be long and tedious." Evident was it, in every number, that the paper "was not undertaken with a view to private emolument, so much as with the wish to employ the editor's leisure hours in a way that would render real service to the most important class of his fellow-citizens." Earnestly did he utter novel thoughts upon matters previously considered "worn out," like a thorough musician who strikes vigorous chords upon a piano which has been devoted to the namby-pamby performances of boarding-school misses.

The second volume of the *American Farmer* was commenced under the most favorable auspices, and Mr. Skinner felt justly encouraged by the long list of subscribers who had honored his exertions. Unluckily he was unable to give expression to his gratitude as he passed the first mile-stone of his chosen career, having been fairly worn down by anxious and embarrassing postal duties. The great northern mail had been robbed between Baltimore and Washington, and the driver killed, causing much excitement. A large portion of the male population thereabouts joined in a pursuit of the culprits —two in number—who were at last taken, and afterward punished. It was not only Mr. Skinner's duty to head this movement in aid of justice, but for weeks he was occupied in answering inquiries respecting missing letters, leaving no time for editorial labor except in the evening at the fireside, "most probably the very place," as he remarked, "where the farmer communes with the editor."

A few weeks later, we find in the *American Farmer* a notable example of Mr. Skinner's purity of heart and unrelaxed sincerity of principle. He had selected for publication some extracts from an old pamphlet, but the compositor accidentally copied other paragraphs, containing indecorous expressions. The edition was printed, and the clerk had mailed many of the papers, when Mr. Skinner arrived at the office in breathless haste. He had just discovered the offensive remarks, and lost no time in ordering a duplicate edition, expunging the expressions "which would have sullied the whole volume." Most editors would have considered an expression of regret a sufficient atonement, but Mr. Skinner, at an expense of nearly eighty dollars, effectually corrected the error. Every number of the objectionable edition was recalled and destroyed.

The summer of 1820 was characterized by an uninterrupted continuation of hot weather, which, with steady official and editorial labor, prostrated Mr. Skinner's system. His physician prescribed a journey on horseback to the mountain springs of Virginia, and he passed the months of August and September (1820) in that splendid farming region between the Blue Ridge and the Alleghanies, which is drained by the Shenandoah, embedded throughout with limestone, and shaded with groves of sugar-maples. Thirty years afterward he recalled with delight the impression made by the view in emerging from that picturesque pass at the confluence of the Shenandoah and the Potomac—with the yet deeper impressions made on a heart then comparatively fresh by the warm welcome received at the hospitable mansions of the Turners, the Holmeses, the Slites, the Caldwells, the Minors, and other country-gentlemen of the Old Dominion. Returning by Rockfish Gap, Mr. Skinner visited the farm-shrine of Monticello, where Mr. Jefferson entertained him

with great kindness, enlisting among the contributors to the *American Farmer*. At dinner, however, the philosophical politician almost forced his guest to eat "millet," (then the ascendant in his constant succession of hobbies,) and to drink mixed wines. The consequence was an internal commotion, which ever rendered Mr. Skinner rather incredulous as to the dietary wisdom of the "Sage of Monticello."

Returning to Baltimore with invigorated health, Mr. Skinner resumed his double labors, and commenced a correspondence of great interest with Sir John Sinclair, the able exponent of British agriculture. It was to Mr. Skinner that the worthy baronet first communicated his valuable correspondence with General Washington, with a request that he would superintend its publication in America, the profits of which were to be applied to the erection of a monument to the illustrious "Farmer of Mount Vernon," at Caithness, in Scotland. Mr. Coke and Lord Erskine were also subscribers to the *American Farmer* and corresponded with its editor, who was highly complimented at one of the "Holkham sheep-shearings by the distinguished host."

At the fall meeting of the "Maryland Agricultural Society," Mr. Skinner delivered an able address upon cultivated grasses, fruit trees, and the professional diffidence of farmers. "The attainment and dissemination of practical knowledge" he considered "the chief aim and end of an agricultural society." "Their value is to be measured, not by the number of people in attendance, nor yet by the number of things exhibited—but by the new facts and valuable additions they bring to the stock of agricultural knowledge."

A "stock farm," for the systematic improvement of the breeds of domestic animals, next occupied Mr. Skinner's active mind, and at the commencement of the year 1821 he was enabled to establish one by the coöperation of R. Oliver, Esq., and Major Isaac McKim. The estate selected was known as the "Maryland Tavern," situated about four miles from Baltimore, on the Great Western Turnpike Road, and contained two hundred acres of good land, with excellent buildings. Here the semi-annual fairs and meetings of the Maryland Agricultural Society were to be held, affording the best farmers of the neighboring States an opportunity to examine and purchase the stock, which was to be preserved in its original purity as imported. Sir John Sinclair, Sir Alexander Don, M.P., and other eminent British stock-raisers gave Mr. Skinner much valuable information as to the best breeds for him to import, upon which he based his orders. His friend Purser Hambleton promised some stock from the Mediterranean; Gorham Parsons, Esq., sent him some swine from his estate at Byfield, Mass.; and he obtained some of the best blooded animals in the Middle States. Among them were the high-bred horses "Clifton" and "Young Tom," the Maltese Jack "Sancho," with cattle of the Alderney, Teeswater, and Devon breeds.

In May, 1821, several hundred extra sets of the *American Farmer* were destroyed by fire when in the hands of the binder. This rendered it necessary to re-print the two first volumes and a portion of the third, in order to supply constant demands from new subscribers for the entire work. Many subscribers had sent their second volume to the same bindery, but their loss was supplied by Mr. Skinner from his new edition, gratuitously. This unostentatious liberality was one of the sterling traits in Mr. Skinner's character, which won him the respect of the community and the love of friends. In some hands the *American Farmer* would have been a mine of wealth to its proprietor, with its large list of subscribers paying four dollars per annum each. But Mr. Skinner's only object in receiving subscriptions appeared to

be an acquisition of funds for increased expenditures. Rare agricultural works were imported, engravings were plentifully furnished, and many a copy was sent to that importunate horde of periodical cormorants, technically termed by publishers as "dead-heads."

The cattle show of the Maryland Agricultural Society was held on the 7th and 8th of June, at the "stock farm," where a large collection of valuable animals was exhibited, to the gratification of a numerous assemblage. Mr. Skinner's private stock was much admired, especially "Columella," a fine animal of the Holderness breed, just received from Gorham Parsons, Esq., who had imported the stock into Massachusetts; and a pair of "Tunis mountain broad-tail sheep," presented by Commodore Jones and Captain Booth, U. S. N. Soon afterward the stock was further increased by a pair of those Tuscan cattle renowned since the days of Virgil, as admirably fitted for the yoke. They were brought from Tuscany by Purser S. Hambleton, and ceded to Mr. Skinner at their original cost, as a contribution to the introduction of useful animals.

Mr. Skinner ever regarded the officers of the navy, (with many of whom he had official relations,) as foremost among his friends and correspondents. Not only did they subscribe more liberally than any other class to the *American Farmer*, but they brought home original communications, agricultural works, stock, poultry, and seeds, as tokens of their regard for "Purser Skinner." Among these useful allies were those gallant spirits, Hull, Chauncey, Bainbridge, Rogers, Jones, Porter, and Perry. The seeds which they brought, as well as those contributed from various parts of the Union, were liberally distributed under Mr. Skinner's frank as postmaster, a clerk being intrusted with the especial duty of preparing them for the mail.

In 1822, with funds liberally supplied by Robert Oliver, Esq., Mr. Skinner imported "Champion," "White Rose," and "Shepherdess," three beautiful animals of the improved short-horned breed of cattle, reared by that noted herdsman, Mr. Charles Champion, of Nottinghamshire, England. When exhibited at the cattle show, on the last days of May, they excited unqualified admiration, and Governor Lloyd (then the largest if not the best practical farmer in Maryland) was so delighted with the perfection of their symmetry, that, within twenty minutes after he first saw them, he had purchased them for $1500. This was about their first cost, and about the same time Mr. Skinner also sold, without profit, his Tuscan cattle to Mr. John Middleton, of S. C.

This successful effort to improve the stock of the republic was recommended to the especial notice of the Maryland Agricultural Society by the committee on "neat cattle," and the applause with which the recommendation was received, evinced a general desire to show a public appreciation of the benefits thus conferred upon the whole farming community. Accordingly, upon motion of the well-known George Calvert, of Riversdale, the Society voted Mr. Skinner three costly pieces of plate, as a compliment for the service he had rendered in exhibiting living and incontestable proof of the high point to which the art of breeding had been carried in mother England. This valuable testimonial was accordingly procured and presented in behalf of the Society, by Gen. Ridgley, of Hampton, Henry Thompson, Esq., and Dr. Allen Thomas, a special committee chosen for the purpose.

In 1823, Mr. Skinner took an active part in organizing monthly social meetings of the trustees of the Western Shore Branch of the Maryland Agricultural Society, and also a society for the improvement of breeds of horses. In order to test the highest qualities and greatest power of this noble animal,

a race-course was established at Canton, near Baltimore, where fair trials of speed were honorably conducted, and every thing demoralizing was excluded. The first three days races commenced on the 22d October, the stakes amounting to $1750, but then, and for some years afterward, competitors came from other States to win the purses, until it became necessary to exclude all horses not owned in Maryland, or the adjacent District of Columbia. Mr. Skinner was always delighted to witness these trials of speed, though it was his boast as late as 1850, that he "never had any pecuniary interest in a horse-race or a cock-fight, nor ever played at any game of chance, or wagered a dollar *on any thing*. But that," said he, "has not kept me from knowing, in horses and dogs, or men and fowls, the true from the sham—nor from preferring the game to any other breed of fowls. With the latter as with the former, I believe the high-bred to be the best for every thing. It would be so in men, but there is not so much attainable certainty in or control over the blood! With equal dominion, a breed of men might be reared, that would naturally loathe the union of wealth and avarice; and intuitively or by nature despise equally and alike, ostentation and meanness."

Such was the success of the *American Farmer*, that other agricultural journals were established. The *Plough-Boy*, at Albany, was edited by Solomon Southwick, Esq., and the *New-England Farmer*, at Boston, by Thomas Green Fessenden, Esq., a gentleman of rare abilities; but they were necessarily local, and as a national agricultural journal, the *American Farmer* maintained its superiority. Mr. Skinner, who knew not what jealousy was, welcomed his co-laborers into the field which he had been the first to cultivate. In a private letter to Mr. Fessenden, he cordially expressed a desire "to strengthen his hand and to encourage his heart, in all efforts to extend the knowledge of discoveries in the science, and any improvements in the practice of agricultural and domestic economy."

But while Mr. Skinner sought with unremitting energy to gather vital matter for his journal, his "outside" labors were of equal importance. At one time we find him procuring from the Maryland Academy of Science, a report upon the fertilizing properties of marl—then the prime mover in arrangements for a cattle-show—then establishing an agricultural library, (through the aid of R. Oliver, Esq.,)—and never neglecting his postal or his editorial duties. Surely, if the gratitude of a nation is due to those gallant men who uphold abroad the starry emblem of our republic, and if such men are considered, by virtue of such service, worthy of national honor and reward, how much more worthy was he of both, who uplifted the national agriculture in the hour of its abasement, and with clarion call rallied the first men around the tottering foundation of our country's prosperity! From the State of Maryland, for which Mr. Skinner did so much, and whose resources he so largely aided in increasing, he received—the militia rank of Governor's Aid, with the title of colonel.

In July, 1824, Col. Skinner again sought in travel relaxation from severe labor, and visited the North, accompanied by his lady. [It was then a two-days' journey from Baltimore to New-York, costing $10.50; from New-York to Providence by steamboat, and thence to Boston, the fare was $14.50; and from New-York to Albany the fare was $4.] Col. Skinner understood the true philosophy of travelling, not rushing over the land like a telegraphic-message, but journeying leisurely along, and tarrying to examine the most interesting works of nature or of art. The Fairmount Water-Works—the Navy-Yard and Parmentier's Garden at Brooklyn—the Military Academy and ruins at West-Point—the Falls on the side of Catskill Mountain—the

Erie Canal—and, to crown all, the glories of Niagara, were in turn examined by the truant from labor with enthusiastic delight. Returning by the way of Boston, he was, to use his own words, "presented by the honored Josiah Quincy to the celebrated 'Oakes' cow,' and to the venerable John Adams, the patriot who nominated George Washington as commander-in-chief of the revolutionary army."

Gen. La Fayette, on revisiting America, lost no time in assuring Col. Skinner that he entertained a particular regard for him, as the namesake of his old comrade, Col. Jack Stuart—a regard which soon ripened into a warm personal friendship. On the 7th of October, 1824, the "Nation's Guest" arrived at Baltimore, on his way to the great "Battle Celebration" at Yorktown, Virginia. He was received at Fort McHenry by Gov. Stevens, of Maryland, who introduced the old hero to the Society of Cincinnati, assembled under the marquee in which he had so often shared the frugal meals and aided the counsels of Washington. "This tent-scene," said Col. Skinner, "was impressive beyond description—this meeting of a venerable remnant of patriot warriors, in the head-quarters of their ever-glorious leader, to welcome his beloved ally, was one of the finest moral spectacles ever witnessed."

Among other tokens of public esteem received by Gen. La Fayette during a brief sojourn in Baltimore, was an address from a deputation of the Maryland Agricultural Society, in which they invited him to attend their exhibition. To meet his convenience the day was postponed, greatly to the satisfaction of the General, who declared that "of all the numerous gatherings to welcome him, none could be more congenial to his feelings than would be an assemblage of the farmers and the planters of the old Maryland line. As they took him by their hands, and exhibited the fruits of their agricultural and of their household industry, he could observe their semi-centennial progress under the free institutions for which he, shoulder to shoulder, had fought and conquered with their Fathers of the Revolution."

Great exertions were made to have a farmers' festival worthy of the occasion, and the display far exceeded any thing of the kind ever witnessed. Not less than fifty horses of superior quality, nearly one hundred neat cattle, with great numbers of excellent sheep and swine, so filled the pens that it became necessary to erect many more after the exhibition commenced. On the 20th of November, (the third day of the show,) General La Fayette arrived on the ground, escorted by an array of dignitaries from the adjacent States, with "an honorable and numerous body-guard of substantial sun-burnt farmers." An address was delivered by Gen. Harper, followed by the reports of the various committees. The fortunate competitors were then called in turn. "Coming forward, they passed through a large circle formed by the members, to receive the trophies of their industry and skill from the hands of the gallant, the disinterested soldier of liberty—the veteran companion of Washington, and the unvarying friend of America."

After the delivery of the premiums, the farmers on the ground, at the invitation of Col. Skinner, formed themselves into two lines, between which Gen. La Fayette passed, shaking each hardy hand with hearty grasp. A dinner followed, with a long array of toasts; after which, Gen. La Fayette visited the theatre, to witness the performance of the favorite play of General Washington—the "School for Scandal." When the point of the plot was developed, in the "screen scene," the illustrious visitor, with his suite, retired from the house, and went to the hospitable mansion of Col. Skinner. Here a gay and brilliant assemblage was congregated, and the host once told the writer that

he never felt more satisfaction than when filling his guest's tumbler from the premium pitcher, bearing a likeness of "Champion."

General La Fayette was so much pleased with Col. Skinner, that he selected him as agent to manage the 20,000 acre grant of land voted him by Congress, and located in Florida. This trust Col. Skinner retained through life, and performed with great fidelity, aided by his friend, Col. R. W. Williams, of Tallahassee. F. G. Skinner, Esq., the Colonel's eldest son and subsequent partner, was at school in France for four years, under Gen. La Fayette's paternal care, passing the vacations at La Grange.

In the autumn of 1824, the "Memoirs of the Pennsylvania Agricultural Society" were published, in a handsome, large volume, under the editorial supervision of Col. Skinner, who was selected by the society, "in proof of their respect for his exemplary fairness, his indefatigable zeal, and his singular ability." The work was expensively printed, and illustrated with costly engravings, through the liberality of John Hare Powell, Esq., of Powelton, near Philadelphia. It contains numerous articles in praise of the short-horned Durham cattle, a breed which Mr. Powell had imported and propagated, with some remarks showing the defects of the Norman, or Alderneys, the Devons, and the native breeds. This excited the ire of the venerable Timothy Pickering, at that time President of the Agricultural Society of Essex county, Mass., where he had a farm. He was no admirer of the Durham short-horns, and attacked Mr. Powell with such vehemence of invective as to call forth a scorching rejoinder. A regular paper war ensued, in which the champions of the various breeds entered the typographical arena, attacking each other in serried columns of—newspapers.

In December of the same year, Col. Skinner commenced the distribution of two barrels of guano, (brought to him from the Peruvian islands, by Midshipman Bland, in the Franklin,) and endeavored to call public attention to its astonishing fertilizing properties. Dr. Duchatel, at his request, furnished a chemical analysis of it, and he also published in the *American Farmer*, translations from Don Antonio de Ulloa, and Baron Humboldt, showing that it had fertilized the naturally sterile soil of Peru. But the planters either neglected the samples sent them, or used the precious fertilizer so injudiciously as to realize no good effects, leaving it for George Law, Esq., just twenty years afterward, to introduce it with triumphant success.

Soon after the commencement of the seventh volume of the *American Farmer*, the dispute on the relative excellence of various breeds of cattle was carried to such a length, that Col. Skinner found it necessary to close the controversy. Severe reflections and sarcastic personalities had been indulged in on both sides, and one gentleman from whom the journal had received many good offices and communications, withdrew his name from the subscription-list. "We care not," wrote Col. Skinner, "a farthing for the loss of one name, or one dozen, or ten dozen names, in comparison with the mortification of our journal being the cause of exciting any ill blood, or wounding any gentleman's feelings. The *American Farmer* was not projected with any regard to the politics, or merely to the number of patrons it might receive. We value the length of its subscription-list at a farthing rushlight, when put in competition with the satisfaction and the honor of dispensing, by the light of its columns, *solid and lasting benefit to the best interests and to the most virtuous class of society.*"

"Internal Improvements" was a conspicuous portion of the sub-title of the *American Farmer*, for Col. Skinner was early of opinion that cheap, and safe, and quick transportation, was indispensable to agricultural prosperity.

This department was profusely illustrated with engravings from English publications, giving thousands their first ideas of railways, locomotive-engines, etc. So sensible was the Maryland Society for Internal Improvement of his valuable exertions, that in April, 1825, they invited him to edit and publish a quarterly journal, intended to promote the execution of public works. After some deliberation he declined, fearing that the increase of literary labor would interfere with his duties as postmaster. "These," he said, "he has the satisfaction to believe are so executed as to give all possible security and satisfaction to the public; and it is only when that end is accomplished, he can venture to indulge in what constitutes his chief pleasure—the devotion of his leisure time and humble talents to studies and employment of solid utility to the country."

A few weeks later, Col. Skinner published a card, (which he requested his brother editors to copy,) soliciting some wild turkeys for Gen. La Fayette, who wished to introduce them at La Grange, and also a pair of opossums for a French naturalist. As might have been expected, there was a generous response. Turkeys came by the score, and Col. Skinner was soon forced to publish a second card, announcing that he had "received opossums enough to stock all Europe. One was left in the office of the *American Farmer*, very securely confined in a box, with her nine young ones, as large as middle-sized rats. In the night, taking her family in her pounch, she ascended the chimney of a three-story house, and made her escape!"

Appointed one of the "West-Point Board of Visitors," Col. Skinner left Baltimore on the day after the cattle show, and passed most of the month of June in attending the examination of the cadets. This visit was to him one of great pleasure and high intellectual interest, and he became intimately acquainted with his colleagues, among them Gov. Hamilton, of South-Carolina, Col. Eustis of the army, and the Hon. George Bancroft, then principal of a boy's school at Northampton. The Hon. Edward Everett, at that time professor of Greek literature at Cambridge, and member elect from that congressional district, was also a member of the Board, and was chosen Secretary. His valedictory to the graduating cadets was pronounced by Col. Skinner a fine specimen of chaste elocution, although rather cold in its effects, conveying the idea that the speaker was rather qualified, by the happiest use of great learning, to enlighten a select body—not to animate a popular assemblage. The Military Academy found great favor with Col. Skinner as a nursery for practical civil engineers, and he published his notes of the examinations on road-making, timber, and other useful matters, with expensive illustrations. While at West-Point, Col. Skinner was Chairman of the Committee on the Domestic Arrangements of the Institution, and conceived the idea of supplying the buildings with pure water from the adjacent mountain springs. After examining the localities, he made a report on the subject which his colleagues indorsed, and which induced Congress to make the requisite appropriations for the work. Col. Thayer was heard to declare that Col. Skinner was thus entitled to be enrolled among the greatest benefactors of the institution.

"Field sports" were now regularly spoken of in the *American Farmer*. "There is," wrote Col. Skinner, "a decided and growing taste for such amusements, and for discussions calculated to enhance the pleasures of those healthful diversions, that necessarily conduct gentlemen from the bar-room and the gaming-table into the open air. It is, however, as we trust, well understood, that we would not inculcate a fondness for rural sports, to an extent that would involve the neglect of any man's cardinal duties. They

can not be too little estimated, who, whatever may be their fortunes, can pass their lives in listless idleness; doing nothing to benefit society, or to add to the stock of human comforts or human knowledge; lounging drones; *nati consumere fruges.* On the other hand, we hold that the greater the industry, and the more constant the application of our faculties to useful business, the greater the necessity for, and the benefit of, relaxation and amusement. That the best bow will lose its elasticity if never unstrung, every boy can understand; and even Scripture tells us—there is a time for all things."

Equally sound was Col. Skinner's argument, in refusing to publish a portion of a letter from the then Western States, criticising the religious principles of Mr. Owen. "It would be unfair," he wrote, "to admit an *impeachment*, and reject a *defense;* and were Mr. Owen to demand, as he might justly do, the right of explaining his doctrines, we should find our journal employed as the medium of controversy on a subject not at all connected with the objects of the *American Farmer.* For remarks upon the general state of any portion of the country, its productions, natural and artificial—the public works and private establishments connected with its agricultural interests, we are always obliged to our correspondents. But in religion or in politics, we never interfere in this place: let every man enjoy his opinions in the one and the other without 'let or hindrance.' Let him worship God in his own way, so he disturb not the peace of society, and at the polls vote his own ballot."

General La Fayette, after his return to La Grange, lost no time in opening a correspondence with Col. Skinner. His first letter, dated January 20th, 1826, commenced thus: "It is not an easy task for me to submit to the wide material separation which now exists between me and my American friends while my mind is constantly with them—and the regret for the loss of their society mingles with an ardent sympathy in their public and personal concerns. So prompt I have been in recovering pleasing habits, and so much attached I feel to my new as well as my old connections in the United States, that it seems to me quite strange to think this winter will pass without meeting any of you, either at Baltimore or Washington. No letter from you, my dear sir—no number of the *American Farmer* has been received. I am eagerly waiting for the papers and letters from my friends, and beg when you write to remember that at a distance minute particulars are very welcome."

The remainder of the letter chronicles the voyage and condition of the Devon stock presented by W. Patterson, Esq., the hogs presented by Col. Skinner, some wild turkeys, and other American gifts. A few months after its receipt, Col. Skinner forwarded to La Grange some desired wild turkeys, partridges or quails, terrapins and opossums, with a fine collection of the different varieties of Indian corn. In return, he received some valuable works on the culture of the mulberry and the rearing of silk-worms, in which he began to take a deep interest.

On the 30th of January, 1827, the House of Delegates of Maryland elected Col. Skinner a Director, on the part of the State, in the Bank of Baltimore. At the same session, the Baltimore and Ohio Railroad Company was incorporated, and the *American Farmer* zealously seconded their exertions. It was a gigantic undertaking, for railroads were then in their infancy. Millions were expended (as we have been informed) for excavation and embankment between Baltimore and Ellicott's Mills, simply to make the points of elevation and depression a few feet less, from the impression that no railroad could be tenable that was not nearly level. No one then dreamed that locomotives

could be constructed of sufficient power to encounter grades of seventy-five, and even ninety feet rise to the mile, with an immense weight of cars and merchandise attached.

In July, 1828, Col, Skinner visited New-York city, and inspected the principal gardens in the suburbs. He was especially delighted with the establishment of Monsieur Andrew Parmentier, a Belgian horticulturist, who had converted twenty-four acres of rocky pasture-land into a landscape garden, with a vine-yard, nurseries, and green-houses. We can but pause to regret the untimely death of this gifted foreigner, who did so much for the cause of horticulture while among us, and whose domestic virtues are yet enshrined in the hearts of those who enjoyed his society.

On the 20th of September, Col. Skinner was one of a large party who assembled at the manor-house of Charles Carroll, (the last surviving signer of the Declaration of Independence,) to congratulate him on the arrival of his ninety-second birthday. "Under other circumstances," wrote Col. Skinner, "it might well be supposed that a company so numerous, with so many resources for conversation and amusement, would break into groups and small circles—some to saunter through the fields and others through the large old garden to gather its delicious fruits, or pluck the flowers whose splendor and fragrance tempted on every side; that the book-worm would steal from the gay circle to pore over some precious volume of ancient lore; and yet more surely that grace and beauty would attract the regards of all who had an eye to admire and and a heart to feel. But on this occasion all other objects seemed to lose their power of attraction, and the 'old gentleman' to fill all eyes and all hearts. Those who were not engaging him in conversation were remarking upon his healthful appearance, his activity, his cheerfulness, the purity of his conversation and morals, his early and constant patriotism, the pregnant events of his life, and the pleasure he must have in the power to draw upon such a boundless store of interesting recollections. In short, so completely does he engross on his birth-day the admiration of his guests, that it seems as if each one had come with the pallet or the pen, to take his portrait, or to write the memorabilia of his early days, while yet and from him alone they may be had."

On the 13th of March, 1829, Col. Skinner published the last number of the tenth volume of the *American Farmer*, then in a flourishing condition, having received within the year just expired an accession of nearly "three hundred subscribers, coming from every State in the Union." Conceived in a laudable desire to do good—conducted with a view to the promotion of national prosperity—dedicated to the interests of a hitherto neglected majority of citizens, the periodical established as an experiment had become a "fixed fact," commanding universal admiration. The pioneer editor, by unflagging industry, had now reared ten monuments upon the broad area of industrial improvement, each volume bearing tokens of his ability, his energy, and his patriotism, as indelible as they were distinct. A score of other agricultural journals had sprung into existence, but the *American Farmer* retained its superiority, ever holding forth a beacon-light to imitators. Let it ever be remembered that Col. Skinner's was "the first voice that was heard claiming for agriculture its rights as a science. His light gleamed alone, but brightly and steadily, amid the dark mists of ignorance and prejudice; and even now—now when the land is illuminated by a thousand—that same torch, in other hands, is burning and blazing with a pure and brilliant flame."

At that time, there was scarcely an agricultural or horticultural society in

Christendom, of which Col. Skinner was not an honorary member, and these indorsements of his labors were to him a source of self-gratulation. The London Horticultural Society had only conferred the same honor on two other Americans, De Witt Clinton and Judge Buel, and with the diploma of the South-Carolina Agricultural Society came its large medal, made, by express vote, of native gold. But he soon transferred his labors to another field.

"The want of a repository in this country, like the English *Sporting Magazine*," (we give Col. Skinner's own words,) "to serve as an authentic record of the performances and pedigrees of the *bred* horse, was admitted by all, whether breeders, owners, or amateurs of that admirable animal. To supply this want a *Turf Register* was made the basis of a periodical work, giving the pedigrees and the performances of American thorough-bred horses. It was also designed as a *Magazine* of information on veterinary subjects generally, and of various rural sports, as racing, shooting, hunting, fishing, trotting matches, etc., together with original sketches of the natural history and habits of American game of all kinds."

The first number of the *American Turf Register and Sporting Magazine* appeared in August, 1829. It was a neatly-printed pamphlet, containing *fifty* pages, and was embellished with an ornamental cover and engravings of game, designed by the ill-fated Rindisbacher. Like the *American Farmer*, it entered an untrodden path of periodical literature, without a single subscriber. But although the price was $5 per annum, it soon had a large list of patrons, and was deservedly popular. So great was the interest which it excited, that horses whose pedigrees it established rose in value from $100 to $5000 and $10,000, and a committee of Turfmen presented the editor with a costly service of silver dinner-plate.

Enthusiastically devoted to field sports, Col. Skinner was so much interested in the *Turf Register* that he was induced to dispose of the *American Farmer* for $20,000. It was purchased, (if we are not mistaken,) by Mr. Hitchcock, and was edited by Gideon B. Smith, Esq., but again changed hands before it came into the possession of Samuel Sands, Esq., who now conducts it with marked ability and industry.

Col. Skinner maintained his devotion to agricultural and mechanical progress, using his "franking privilege" for the purpose of disseminating plants and seeds. The "silk culture" received his especial attention, and his friend General La Fayette supplied him with the latest French works upon this then exciting question.

President Jackson, the "Farmer of the Hermitage," was a subscriber to, and constant reader of, Col. Skinner's periodicals, and was ever well pleased to see him at the "White House." As we have previously remarked, he re-nominated him as postmaster at Baltimore, and he also reäppointed him one of the "West-Point Board of Visitors."

The *Turf Register* continued to win golden opinions; indeed, Col. Skinner's editorial career afforded proof that "independence" is the motto for a "sanctum;" whoever speaks the truth out of a sound heart is sure to find an echo in public opinion. Neither did he mislead his readers by interested recommendations of new tools, seeds, or medicines, written by the vendors thereof, and at one time, he even refused to publish such matter among his advertisements. Subsequently, he sold the *Turf Register* for $10,000 to Mr. Pegram, of Petersburgh, Va., who afterwards sold it to Mr. Robert Gilmore, Jr., of Baltimore, and he to that "Tall Son of York," Mr. Porter. The last-named gentleman was a particular favorite with Col. Skinner, who once "heartily wished that his success may equal his '*Spirit*'—may he

never be at a loss for the where and the wherewithal, to wet his line and his —whistle; and may he never throw fly, without hooking a trout." So say we all of us.

After having thus severed his editorial connections, Col. Skinner at different times prepared valuable foreign works for the press, enriching them with such notes as his experience suggested, to adapt them for American use. Prominent among these works are "Youatt on the Horse," "Mason's Farrier," "The Sportsman and the Dog," "Improved Cattle Doctor," (and in the Farmer's Library,) "Petzhold's Lectures on Agricultural Chemistry," "Von Thaer's Principles of Agriculture," and "Stephen's Book of the Farm." The English editions of the three last-named works cost $42. Col. Skinner's annotated American editions were sold at $5.

In 1837, Mr. Van Buren's administration commenced, and Col. Skinner, who had never been a politician, was summarily removed from the Baltimore post-office. Naturally wishing to increase the property upon which his family were dependent, he entered into an association with some gentlemen for the purchase of land on speculation, and visited the south-west to invest their joint funds. Business tact, however, was not among Col. Skinner's qualifications, and falling into the hands of shrewd land-dealers, he was sadly deceived in his purchases. Some investments in the silk culture were equally unprofitable, and the next year found him involved in a sweeping financial catastrophe. By no fault of his, unless over-confidence in others be a fault, he was deprived of the fruits of his long labors; but the change of fortune called forth no lamentations, no bitterness of spirit. Nay, the thunder-stroke of poverty only called forth the true nobility of his soul—the true dignity of his character. Others might have sunk, prostrated by the blow, but Col. Skinner went manfully to work. Editing agricultural works for publication, writing articles for the *American Farmer*, and acting as agent for the sale of lands, he occupied, and that with profit, all of his time.

There was another change of administration, and Gen. Harrison had not been in the White House a week, before Col. Skinner was appointed third assistant Postmaster-General, an important office. Entering upon its manifold duties with zealous application, he soon mastered every detail, nor was any one ever heard to complain that Col. Skinner had treated his case superficially, or with an imperfect intelligence of its merits. A simple perusal of the papers relating to any contract, enabled him to form the soundest judgment of its merits, and he curtailed the expenditure of his Bureau $200,000. So unremitting was his industry, that the close confinement brought on fits of giddiness in the head, which suddenly destroyed his hearing. Fortunately his other faculties remained entire; there was not, on his recovery, the slightest intimation of any diminished vigor of mind, and he was not only able to continue the discharge of his official duties, but to enjoy the society of his friends, and to solace himself with his ever-cherished agricultural literature.

In March, 1845, Mr. Polk ascended the Presidential chair, and the first officer removed by Cave Johnson, Postmaster-General, was Col. Skinner. Not a whit daunted, he soon set out for New-York, in search of a new field of labor. "He found himself," to use his own words, "having passed from the green twig to the hard wood, and now, as he was entering into the 'sear and yellow leaf' of life, dependent more than ever upon the fruits of his daily labor for subsistence."

He was not long idle. Messrs. Greeley and McElrath, the enterprising publishers of the *New-York Tribune*, soon engaged him to project and edit

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a periodical work to be called the *Farmer's Library and Monthly Journal of Agriculture*, for which they gave him *carte blanche*. It was accordingly commenced in July, 1845, in a beautiful typographical garb, with costly engravings, and was in every way worthy of the art which it sustained. In the first half of each monthly number was a portion of some standard work, generally reprints of costly foreign publications; the remaining fifty pages wer edevoted to foreign and domestic agriculture, with accounts of experiments, improved processes, new inventions, etc., forming the amplest and the most comprehensive periodical ever devoted to the producing interests.

In September, 1845, Col. Skinner visited Massachusetts, to attend a trial of sub-soil ploughs at "Indian Hill Farm," then the residence of the writer's father, who has since departed this life to join his old agricultural friend in another world. Among the guests was the Hon. Isaac Hill, also justly distinguished as an agricultural journalist, with some three hundred others, as the invitations read, of "all occupations, politics, and religions." Surrounded by practical yeomen, the veteran "American farmer" was in his element, seasoning sound counsel with many a pleasant reminiscence, and "the sensible old editor with the queer ear-trumpet" is yet spoken of with admiration at the surrounding firesides.

A visit to Canada, with his family, recruited Col. Skinner's drooping health in the summer of 1846, and both at Montreal and Quebec he found that his reputation had preceded him, securing hospitable attention. With Niagara Falls he was delighted, and we regret that we can not copy his remarks to a friend on their sublime grandeur; "to describe them," he wrote, "would require the hand of Omnipotence itself, with a pen of light." The next winter, he visited his second son at New-Orleans, (who died shortly afterwards,) and was honored with a public dinner, as a national benefactor.

In October, 1847, Col. Skinner visited Massachusetts, and was taken by Sam. Lawrence, Esq., to visit the new city bearing his name, on the banks of the Merrimac. What three years previous was a naked, sandy plain, had become a youthful Lowell, magically created by the power of New-England industry, and the energy of New-England talent. Already the largest woolen factory in the world, two huge cotton-mills, a spacious machine-shop, and an iron foundry, were in active operation, and there were churches, hotels, school-houses, gas-works, newspaper printing-offices, a bank, town-house, etc., besides private dwellings and stores well filled with goods. The population numbered upwards of 8000, and the rise in the value of farms, for miles around, bore ample testimony to Col. Skinner's favorite maxim: "The plough profits by the successes of the anvil and the loom."

During Col. Skinner's visit to New-England, he was advised by his numerous friends there to carry into effect a suggestion originally made by Henry C. Carey, Esq., of Philadelphia, and establish a new periodical of his own. The *Farmer's Library*, costing as it did $5 per annum to each subscriber, was too expensive, and probably of too elevated a character to become popular or profitable. When, therefore, his three years' agreement with its liberal publishers had expired, Col. Skinner purchased the good will of the establishment, and removed it to Philadelphia. To indicate its comprehensive aims, he called his new publication *The Plough, the Loom, and the Anvil*, and offered it at a barely remunerative price. Launching this new barque of his hopes upon the uncertain sea of public patronage, he called to his aid a stanch crew, and pursued his course with rejuvenated vigor, guided by the pole-star of his thoughts, the prosperous coöperation of home industrial pursuits.

The reäppearance of Col. Skinner as editor, was greeted with approving compliments by a large portion of the American press. His services as conductor of the *American Farmer* were held in grateful remembrance, and a wide circulation had been given to extensively-copied articles since furnished by him to the *New-York Albion* and the *Philadelphia Courier*. Especially were they delighted with the energy with which he "commenced business" at the age of three-score past, saying, with manly frankness, "Exposed again and again to trying difficulties, I have never allowed myself to despair, being always conscious of a *willingness to work*—and you will sooner aid than censure a man who, if he must fail, would have it in his power to say, that it was not for want of every honest effort to succeed."

Such a man could not "fail"—there was not (as Napoleon said of the word impossible) such an expression in his vocabulary. After a few numbers had been published, "subscribers began to come in daily at the rate of 600 a month," and the first men in the land had lost no time in encouraging his efforts. Among these commendatory letters was one from the "Hero of Buena-Vista," dated "Baton-Rouge, July 23d, 1848," in which he said: "The subject is one to which I have devoted much of my life, and in which I yet continue to take the deepest interest; and in reading the periodical from month to month, which I shall continue to do with great attention, I feel that I shall become largely your debtor for the pleasure and instruction which I shall derive from it. That your important undertaking may meet with every success, is my earnest hope and desire."

It may not be amiss here to state that when General Taylor became President, he directed the appointment of Col. Skinner's eldest son and partner, as "Chief of the Agricultural Bureau" of the Patent-Office. In collecting and arranging materials for the Annual Report, Mr. F. S. Skinner proved himself worthy and well qualified to "follow in the footsteps of his illustrious predecessor." One of his published works, a translation from the French of "The Elements of Agriculture," is pronounced by competent judges to be the best text-book in the English language for those who wish to commence the study of agriculture as a science.

As the new periodical was published monthly, Col. Skinner was enabled to accept some of the many invitations sent him to attend agricultural festivals. That held by his old friends of the Maryland Agricultural Society in 1848, (when they turned over a new leaf,) was to him a source of great delight, and he was loud in his praises of Mr. President Calvert, as one "of whom it could not be said that he pointed the way, but did not go in it himself." From Baltimore, he made—to use his own words—"a long-intended flying visit to the good old Eastern Shore of Maryland—the land of good hominy, good oysters, good ducks, good mutton, good men, and what is more—*gentlemen!*"

In August, 1849, Col. Skinner again visited New-England, accompanied by the ladies of his family, and received many attentions from his numerous friends. Returning to Philadelphia in time to "get out" his September number, he then attended the Montgomery County (Md.) Fair, and on the 6th of October delivered an address before the Bucks County (Pa.) Agricultural Society. It was an able elaboration of his favorite theme, urging the enactment of a policy that would draw the prosperous consumers employed in other industries, close around the plough and the harrow.

The next year, Col. Skinner was invited by the "Massachusetts Charitable Mechanics' Association," to deliver the address at their triennial exhibition of domestic manufactures. On his way, he tarried at the New-York State

Fair, where he unexpectedly met a grandson of his old friend, General La Fayette, who accompanied him to Boston. The address, which was delivered before a crowded audience in the hall of the "Lowell Institute," was sound and practical, as he intended it should be, judging from this introductory sentence: "As the philosophy, the beneficence, and the moral beauty of your admirable association, have been so well illustrated on previous occasions, even by an Everett and other sons of Massachusetts, eminent for their learning, patriotism, and rhetoric—may I not hope that you will now listen with kind forbearance to a very plain discourse; in which it shall be my endeavor, without disguise and without ornament, to show, that if all our great branches of industry be not in fact identical, they are yet so blended, and so necessary to each other, that whatever acts or policy shall pollute the fountain of the one, must necessarily impair the healthful action and flow of all the others. So truly may the Plough say of the Loom and the Ship, 'This is bone of my bones, and flesh of my flesh,' so near is their relationship, that, in my judgment, it is impossible freely and fairly to advocate the prosperity of one, without pleading the cause of them all."

Before leaving New-England, Col. Skinner was an honored guest at the Fair of the Norfolk County (Mass.) Agricultural Society at Dedham—at that of the Essex County Agricultural Society at Salem—and at several of those horticultural exhibitions which, to use his own language, "at that season of the falling-leaf, contribute so much to bring out the ripe fruits and fair flowers in and around the goodly city of Boston." He was also induced to visit New-Bedford, Clinton, Lowell, Concord, and other towns, and everywhere received many tokens of respect.

Returning to his editorial chair, Col. Skinner hailed the advent of the year 1851 with uncommon gladness. From the good offices of friends, and the gratuitous assistance of able correspondents, *The Plough, the Loom, and the Anvil* was not only able "to walk along, but to move ahead in the strength of its own good purpose." During the year just past, he had added not less than one thousand names to his list of subscribers, and had in addition received cheering assurance that the cherished creation of his ripened intellect would receive a still larger accession of patronage in the year to come. Among others who took a warm interest in its success, were twenty members of Congress, from different States and sections, who signed a circular, recommending the periodical "to the patronage of all who desire to see American Industry fairly protected in the development of our own resources, and the working up of our own materials."

In February, Col. Skinner took his wife to Washington, on a visit to their son, and, as they returned to Philadelphia, they tarried at Baltimore, guests of her mother, the late Mrs. Davies. Surrounded by old friends, who had long esteemed him for his social qualities, his unassuming demeanor, and his generous impulses, the veteran was naturally in high spirits. Little thought he that "the silver cord was soon to be loosed," and oh! how suddenly.

On the morning of the 21st of March, 1851, Col. Skinner left his wife, saying as he went, "I am in better health and feel more like myself than I have for years." After making several calls, he stepped into the interior of the post-office, to get his letters and papers. On one side of the office there are two doors, side by side, one leading into North street, and the other into a cellar-way. When Col. Skinner first started to go out, he partially opened the door leading into the street—then, saying "I have forgotten some papers," he returned into the postmaster's private room. Finding what he

sought, and observing that his dinner hour was near at hand, he hurried away—unfortunately mistook the door—opened the wrong one, to which there was not even a sill—and at the first step was precipitated to the bottom of the cellar, making a complete summerset as he fell, and fracturing his skull upon a large stone at the foot of the ladder. The clerks and carriers (one of whom saw him open the wrong door, but had not time to warn him of the mistake before he fell) immediately ran to his assistance, and found him speechless. They carried him into the postmaster's room, and called in a number of physicians, among whom were Drs. Butler, Riley, and McKenzie, who did every thing that the best medical science could suggest; but his skull was found to be badly fractured at the base, and his injuries of such a character as to leave no hope of his surviving.

His afflicted wife found him who for so many years had been all in all to her, lying upon the floor, with his life-blood pouring from his ears, and groaning in his insensible agony. Placed upon a cot, he seemed easier, and although he had lost the faculty of speech, he indicated by disjointed expressions, a consciousness of approaching dissolution, with a firm reliance in the mercy of God. At length, about seven o'clock, he clasped the hand of his faithful nurse, who was wiping away the blood flowing from his nostrils, and faintly exclaimed: "My God! Trouble will soon be over." Then, falling into a tranquil slumber, his spirit passed away without a struggle or a groan.

And thus, in the full enjoyment of health, ripe in years and in honors, was snatched away this true-hearted citizen. Who that gazes on his portrait prefixed to this sketch, can avoid feeling the acutest regret at his sudden and sad death? As we recall him to mind, he was a muscular, well-formed man, possessing the dignified manners of the old school, without its formal stiffness. There was a mingled kindness and penetration in his look, his eye was full and intelligent, and when engaged in conversation, his countenance would lighten up with the clear blaze of intellectual expression. Who that knew him will not echo, from the heart, this eulogium of Joseph Gales, Esq., the respected senior editor of the *National Intelligencer*? "We have personally known Col. Skinner intimately, in prosperity and adversity, and in every relation of life, and are able to bear testimony to his integrity, his honor, his kindness of heart, his attachment to his friends, and his devotion to his family—in which relations, composing as a whole his character, we only express our conscientious belief when we say, that in all these essentials he was entitled to a place in the first rank of humanity."

Our simple simple task is achieved. We have diligently endeavored to pay our tribute of gratitude to this great, good, and eminently useful citizen—whose works were an honor to him while he was living, and are his only monument, until a votive tablet recording his services shall grace the national column now being erected in honor of the immortal Washington! The news of his untimely death created the most profound sorrow, but his victories had been those of peace, and there has been (until the present movement was started) no provision for the beloved comrade of his thirty years' campaign. This was wrong! The American people, so enriched by his long labors, owe her a generous maintenance, and we hope that by pecuniary oblation, as well as by monumental stone, his memory will be substantially honored by all who are interested in the joint successes of "the Plough, the Loom, and the Anvil."—[See also page 54.]

ILLINOIS MARBLE.

THE geological survey of this State, says the *Prairie Farmer*, under the charge of Dr. Norwood, has brought to light several sources of wealth and luxury not before known to exist. Among others, are several deposits of marble of different colors, and suited to different uses. Among these, according to the *Alton Courier*, is a variegated variety, suitable for any description of in-door and ornamental work, as mantels, table-tops, etc. It is from Southern Illinois, and will compare favorably with most of the imported marbles used for such purposes. It resembles, most nearly, some varieties of Egyptian marble.

Two pieces of black marble, which, for beauty, depth of color, and high polish, are not excelled by any specimens of the famous Irish black marble that have come under our notice, and which is so much used for mantel-tops and *similar* purposes, are also from Southern Illinois.

A light-colored, nearly white, marble, from the vicinity of Thebes, appears to be one among the best rocks we have met with for almost every purpose of in and out-door work. It is very nearly pure carbonate of lime, sub-crystalline, very compact, and admits of a fine polish. No Western rock equal to it, in every requisite for building purposes, has yet, so far as we know, been placed in any public or private structure in the West, except, perhaps, in a single building in Chicago. We understand the quarries are inexhaustible, and that they are contiguous to navigation.

A beautiful oolitic marble, from Hardin County, receives a fine polish, and appears to be harder, and better able to stand the effects of the weather, than a similar rock from St. Genevieve, Missouri, which has been used to some extent in St. Louis. The structure of this rock is as curious as the wrought samples are beautiful. It can be worked with great ease into any desired form.

A specimen of marble-conglomerate, from Pike County, is one of the most *beautiful ornamental* rocks we have met with in the West. It more nearly *resembles* the "Potomac marble" used in the pillars of the Capitol at Washington, than any other rock. It appears to be quite as durable and takes as fine a polish as the Potomac rock, but owing to the grave colors of the pebbles of which it is made up, does not present so brilliant an appearance. It is very compact, and the cement appears to be very strong.

FLAX.—THE FALL-RIVER COMPANY.

A LINEN COMPANY, organized at Fall River, Mass., as a means of inducing farmers to engage in the flax-culture, offer to buy the lint on certain specified conditions. Their wishes will be understood by an extract from their circular. They say: "We propose, in order to give the grower an idea of our wants, to deposit with well-known parties in each State, adequate samples of the flax-fibre grown in our own and other countries, and imported by us within the past few months, and to affix to each sample the cash price we paid for those qualities when laid down in New-York, adding the charges for commissions, freight-duties, exchange, and other expenses. We will then

bind ourselves to pay for twelve months from this date, the same prices in cash for all the flax-fibre, of equal qualities to the samples so deposited, which may be prepared and forwarded to New-York by Western parties; or to pay such prices, less the freight and other charges to New-York, on all flax so delivered to our agents in Louisville, Cincinnati, or Chicago.

By this means the Western farmer will secure to himself not only the profits which have been found sufficient to remunerate the European cultivator, but the many charges to which such articles are subject in the transit; and also may, with proper management, obtain a larger amount of flax-seed per acre than he now realizes. And we fully believe that after having been induced by the above extraordinary offer to try the experiment fairly for one year, he will find flax to be the most profitable crop that he can turn his attention to.

We propose taking the flax at *some rate*, unless it should fall too far below the sample furnished, to be of any advantage for us to manufacture. We wish all the flax either pulled or cut with a cradle so carefully as to preserve the stalk uninjured and the ends even; the seed taken off by a rippling-comb, or by passing the heads of the stalk through rollers, so as to avoid the present effects of threshing; the flax to be water-rotted and scutched; to be sent in bales and packages, so as to be all ready for heckling on reaching our mill."

Walter Paine, at Fall River, is the agent of this company.

WATER-ROTTED HEMP.

THE proper time for sowing the crop varies with the different seasons, but as a general remark, from the 25th April to the 15th May will be found best. Earlier than this the hemp is apt to be short; later, the quality of the lint inferior. The earlier sowing should be upon strong land, the later upon that which is more reduced. It has for some years past been the practice among farmers to save large portions of their seed from hemp that was intended for a crop of lint; but, failing to do this, the seed was permitted to ripen and preserved for sowing the next season. From this and other causes affecting most plants not natives of a country, I am of opinion that our hemp-seed has deteriorated, and that we need not expect generally to make good crops of good quality until our seed is renewed. Imperfect seed must necessarily produce unhealthy plants. You would confer a favor upon hemp-growers by procuring through the Navy Department, for distribution, some foreign seed, either Russian or Italian, the former to be preferred.

I shall now proceed to the second division of the subject, the preparation of hemp for naval purposes.

This portion of the subject must necessarily commence with the harvesting of the crop. I will here remark that he who would be successful in the prosecution of this business, must be untiring in his attention to his laborers in every successive step; every thing must be done well; no carelessness, no slovenly handling of the hemp is admissible. A good article and a good yield is the object; this can not be obtained but by unceasing attention. It all comes easy enough when laborers are taught and required to do their work well, nor does it retard, to any extent, the quantity of work to be done.

In cutting the crop, especial care must be paid to keeping the straw straight; no straw should be allowed to be broken, doubled, or crossed in the bundle. The hemp has to be hackled, and all tangled fibres will necessarily be taken out by this process, nor will the loss stop at this; these fibres will entangle others, which will also be lost; some loss is unavoidable, but by care much may be prevented. It is equally important that each hand of hemp, as it is cut, should be carefully butted before it is spread down by the cutter; no laborer should ever, in any handling of the hemp, be permitted to pass a bundle out of his hands without first lightly tapping its butt on the ground.

If this is not attended to, there will be unnecessary waste in heckling. As it is one of the reasons for my desire to impress the importance of keeping the bundle square at the root, I will here state, that when a stack of hemp is held by its roots' end, there is in the hand of the person the end of every fibre of lint that is upon it, and that the fibres successively run out from the first to the last pair of leaves. To exemplify: Take a hand of hemp and heckle it; if the root-end of the fibres has been permitted to become uneven, as is almost universally found in dew-rotted hemp, it must be grasped near its middle, so as to have in the hands of the operator the end of all the fibres; throw the top end into the heckle and clear it of tow, and it will be found that, except the tangled fibres taken out, there is but little waste; reverse the hand and heckle the other end, the result will be that near two thirds of the weight of the hand of hemp has been lost in this latter part of the operation. If the same hand of hemp had been perfectly handled in all the different operations through which it had to pass, the loss in tow would have been less than one half, probably not more than one third. You, sir, may think that I am too tedious in these apparently minor matters, but permit me to say that my observation has shown them to be of paramount importance. I wish to impress the importance of doing this work well. But to return: the hemp when cut, should be spread evenly and as thinly over the ground as practicable, and so soon as sufficiently cured, put into stacks near the place where it is to be rotted.

Rain and heavy dews will, after the hemp has commenced to cure, injure its color and quality. To obviate this, when the weather is unfavorable, it is a good plan to set up in shocks, without being bound up in bundles, all hemp of a suitable quality that has been exposed to the sun for twenty-four hours. It should be permitted to cure well in the shock before being bound into bundles and stacked. In this way it will cure bright and retain a greenish appearance. If the outside of the shocks have become darkened by exposure to bad weather, the dark hemp may be stripped off and secured for dew-rotting. I practised this plan when engaged in this business, and found it to be a good one, affording an excellent opportunity, when my hemp was uneven, of selecting such as was suitable for water-rotting, the balance being left on the ground to cure for dew-rotting. The most suitable length of hemp for the purpose in view, is from six to eight feet; something longer will do if it is not too coarse; and something shorter, if the crop stands well on the ground and is not grassy or weedy. The proper time for cutting hemp is at any time after the dust (pollen) of the blossom-hemp has commenced to blow off, until these stalks commence to die; if not cut by this time, the first rain will darken the dead straw and materially injure the quality of the crop.

The best period for water-rotting hemp is from the 1st of September until Christmas; by this time, if practicable, the crop should be rotted. The process of rotting goes on slowly in the winter months. I have had hemp put into the vats the week before Christmas, which had to remain in the

water until the latter part of February before it was in a condition to be taken out. The time required for the hemp to remain in the vat varies with the temperature of the water; in the month of September it will rot in from five to eight days; in October from seven to ten; in November from ten to fourteen; in December from fourteen to twenty-one; in January from four to seven weeks. This of course is but an approximation to the time required, the temperature of the weather governing it. This may be readily understood when we know that, in rotting hemp by this process, putrefactive fermentation to a greater or less extent has to be set up, and this is readily accomplished at a temperature of from 60° to 100°, but is slow in being established between 32° and 60°.

I am of the opinion that it is very sparingly soluble at a temperature between the freezing point, and that we must mainly rely upon the establishment of putrefactive fermentation. Whatever means, either artificial or natural, that will keep the water in which the hemp is immersed at a temperature between 60° and 100° of Fahrenheit, is the best calculated to facilitate the rotting process, and my observation justifies me in saying that hemp rotted in the fall months is of better quality than that rotted in winter.

In selecting a site for water-rotting hemp, some attention should be given to the supply and quality of water, the amount of head that can be obtained, and the facility of drainage of the vat. The quantity of water required will, of course, depend upon the size of the vat. The quality of the water refers only to its purity. The vat should be located as near a bold spring as practicable, so as to insure a supply of *clear* water—muddy water is very destructive to the quality of the hemp, rotting it unevenly, making it towy, and coloring it. Large branches that are subject to floods from heavy rains are not suitable, as the water for several days in succession at these periods will be muddy, and the vats liable to overflow. Before making a vat, the situation should be carefully examined with a level, for the purpose of ascertaining what head of water can be had and the facility for drainage. There should always be sufficient head of water to fill the vat when the hemp is in it, unless the fountain be a very bold one. There are periods when the vat is to be emptied of water, and, for the sake of comfort, the drainage should be perfect. The location being selected, the size of the vat or vats will depend on the supply of water, quantity of work to be done, and the fancy of the owner. I will here give the size and manner of construction of my vat, and the quantity of work that can be done with it. Length 116 feet, width 16, depth 4 feet, excavated in the clay. For the purpose of keeping the hemp under water, I have 13 sills of 20 feet in length, 10 inches wide, and 6 inches thick, let into the bottom of the vat, across it, commencing with one near each end, and the others placed at equal distances apart. Two feet from each end of the sills, I have two upright pieces of timber, 3 inches thick, 6 wide, and 6½ feet long, dove-tailed into the sides of the sills, and then pinned fast; these uprights should stand at right angles with the sills, and parallel with each other, and 4 to 5 inches apart, at the distance of 4 feet 8 inches from the top of the sill; each upright has a mortice, cut 3 inches long and 1½ inches wide, for the purpose of receiving a key or cross-piece, under which the lines are placed which are to hold the hemp under the water. The distance between the uprights at each end of the sill is 16 feet; the keys through the uprights upon one side of the vat should be made fast, upon the other side left loose, so as to be put in over the lever when it is [illegible] in place. The sills with their appendages being put in place, the [illegible] should be built up with a heavy stone

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wall, which should come out even with the inner edge of the uprights; the wall should be 4 feet high and flagged at the top.

At the bottom of the wall upon the end of each sill should be placed a long, wide, and strong rock, and care be taken in building the wall to throw as much of its weight as possible on each end of each sill. Hemp is very buoyant for two or three days after letting the water on it, and too much attention can not be given to making every thing secure.

A place must be arranged at the bottom of the vat at the point of drainage, to carry off the water when desired; and another at the point of supply, to bring it in at the top of the vat; common wooden pipes answer for this purpose very well. The drainage must be so arranged as to be capable of being made water-tight; nearly every person will possess mechanical ingenuity sufficient for this. Thirteen levers, 18 feet long and a foot in diameter, at their centre, of strong timber, with each end dressed a little over a foot, so as to pass in between the uprights for the purpose of holding down the hemp, complete the structure of the vat or pool. A vat of the dimensions just given, will hold enough of hemp in the straw, at one filling, to make about two tons of hemp from the brake, and in one season to water from fifteen to twenty tons.

Various modifications of the plan here given may be made; the vat, for instance, may be only half the depth, or half the width, etc. Various modes also may be arranged to keep the hemp under water while rotting; but whatever plan may be adopted, be sure that every thing is strong. We are now prepared to commence the process of water-rotting. The best plan for arranging the hemp-straw for this operation, is to make up twenty-five or thirty bundles into a bale seven or eight feet long, and bind it round in three places with bands made with brake or other tow. These bales can be made very firm by having a frame of proper length, depth, and width provided for putting them up; when the box or frame is filled with the straw, a lever is applied to press it solid, and the bale is tied with the bands. This is a very simple contrivance, and about as speedy as any other mode of getting the hemp into the pool. These bales should not be over two feet square, and *eight feet long*; they may be placed in the vat as fast as they are made. If the bottom of the vat is muddy, a few small rails should be placed in it to keep the hemp clean. The bales should be placed in the vats in two tiers, two bales deep from one end to the other; two tiers of bales eight feet long will just fill across the vat. If they are shorter, press the end of the bales well up to the walls on each side, and any vacancy that may be, let it be down the middle of the vat. Hemp over eight feet in length should be reduced to this length by chopping off sufficient of the end.

The hemp being in place in the vat, the arrangement for fastening it down comes next. Upon each tier of bales, from one end of the vat to the other, is laid a line of four strong rails, so placed that when the levers are put in place, each end of each rail should be firmly held down by them, and the rails so distributed along the length of the bale as to hold down all its parts equally. Now the levers are placed in their situation, the key put in over them, and the water let on. The water may be permitted to run into the vat in a full stream until it is three fourths full, then reduce the supply to such an extent as that the hemp may be completely immersed in from twenty-four to thirty-six hours. It will be well, in the time occupied in covering the hemp with water, to be sure that at night the supply is not too [illegible]. Hemp, when first put into the water, is very buoyant, and remains so until the water expels the air from the cavity of the straw, and unless some attention be paid to this, it will

severely test the strength of your arrangements, and often cause much vexation and trouble. After the pool is filled with water, the supply of it should be so regulated as only to have as much running in as will supply the leakage—a redundance of water retards the process. Keep the hemp completely under water until it is ready for removal from the vat.

It is very difficult to point out with sufficient clearness any test by which it may be known when the hemp is sufficiently watered; this only can be learned by close observation. Make it a rule never to over-rot; hemp overdone is unfit for naval purposes. If it is not sufficiently rotted for breaking, it may be exposed to the weather, as in dew-rotting, until it is. After the coloring matter is extracted by the water, exposure to the weather will not materially injure the color. When the hemp has been covered with water for about the shortest period noted for the different months, commence to examine it by drawing out a few straws from some bale as deep under water as it can be got; if sufficiently watered, its odor is unpleasant, the lint slimy and easily separated from the wood, the leaves in a state of decay, and the wood, in attempting to bend the stalk, will break off short. When too tough to snap off tolerably freely, it is not done. As a further test, dry as speedily as practicable a small quantity, and test as in dew-rotting.

In applying this latter test, do not expect to find the wood break or the lint to separate as freely as in dew-rotted hemp. It is best always to bring the hemp as near as possible to the right state in water. Nearly any person, after a little experience, will be enabled readily to determine when it is fit for removal from the vat. This point being determined, a sufficiency of water is drawn off to loosen the levers, which are then removed, the rails on top of the hemp thrown off, and the pool again filled with water. A revolving crane, with a geared windlass attached, rigged with a stout rope, to the end of which strong iron arms are affixed, for the purpose of receiving the floating bales of hemp, is an admirable contrivance for removing the bales from the vat to the cart. The iron arms are sunk sufficiently in the water to receive a bale of hemp, two stout hands, by the windlass, hoist it high enough to be swung round over the cart, and loaded across the top of a strong frame-bed. Two of these bales are a sufficient load for a yoke of steers, and two carts will remove the hemp from a vat, such as described, in a little over one day's time, provided the place of drying be not far from the vat. There should be convenient to the place of operation, six or eight acres of sod-land, upon which to spread the hemp to dry, or to finish the rotting process when necessary. It is removed to this piece of ground by the carts; the bales tilted therefrom, and allowed to drain for a few hours; the bands then removed, so the bales may fall apart, which, if not sufficient to allow the bundles to drain well, they must be separated by hand. When the bundles are sufficiently drained to allow handling without breaking or tangling the straw, they should be spread out to dry or to water more if necessary. Taking off the bands and spreading the hemp are the only unpleasant processes attending this plan of operation; the spreading need not be so, unless the operator is in too great a hurry to spread it before it is sufficiently drained; indeed, if the bundles are well selected, they may become nearly dry before being spread.

In freezing weather, if they become frozen before spreading, let them thus remain until either frozen dry or they thaw. The hemp-straw, when being removed from the vat, is exceedingly tender; and in all the manipulations attending this process, great care should be taken neither to break nor tangle it. In passing the hemp through the brake, close attention must be given to

having it handed in small hands, say from one half to three quarters of a pound of lint; under no circumstances to exceed the larger quantity. The butt of the straw should be kept perfectly square. After squaring the butt-end of the straw, before it is placed under the brake, a leather strap, buckled tightly around and within six inches of the root-end of the straw, will prevent its becoming uneven while under the brake. Break the top-end first, leaving only sufficient unbroken straw at the butt-end, by which to hold the hand. The lint should be perfectly clear at the break of the shives. When the process of breaking water-rotted hemp has been properly performed, the root-end of the hand of lint should be as square as though it had been chopped by an axe; it should be clear of all woody matter, have comparatively little tow in it, be free from tangled fibres, and have suffered but little loss in the way of brake-tow. This is one of the most important operations in the preparation of water-rotted hemp, and too much care can not be devoted to it. A hand of hemp, in which the straw was but six feet long, if allowed to become stretched to eight feet in breaking, will certainly result in great loss in hackling, and injuring its quality. The kind of brake must be left to the fancy of the operator. In hackling the hemp, the only instrument necessary is the common tapering heckle of bagging manufacturers; and the process is a simple one, if proper attention has been paid to its previous preparation.

The hand of hemp, not exceeding three fourths of a pound in weight, (half a pound is better,) is grasped firmly as near as practicable to the root-end, not farther from this than will suffice to have the end of all the fibres composing the hand within the grasp. Then a few times drawing it through the heckle, from as near the hand as possible, will finish the operation with this end. Reverse the hand, grasping it just above the point reached by the heckle in the first instance, and clean the root-end of the tow. Any little switch which may be at each end must be cropped off and thrown with the tow. A small box of sufficient length and other dimensions to receive from twelve to fourteen pounds of the heckled hemp in an extended state, must be at hand, in which the hemp is placed by the heckler as it is prepared. The hemp must be placed in the box at full length; the root-end of the bundle must be kept even, and when twelve to fourteen pounds are placed in it, it must be tied firmly around, and within some ten or twelve inches of the root-end. Another small string passed around the bundle, at about two thirds the distance to the top, and tied firmly, may also be used. The hemp has now to be placed in well-pressed bales of four hundred and fifty to five hundred pounds in weight, well covered with bagging and well secured by cordage.

This closes the manipulations through which hemp has to pass in preparing it for naval purposes.

The length of this article has precluded an examination of other plans. I have here given what I conceive to be the best mode of operating with cold water. The business is not an unpleasant one; with a steady market it is remunerative, and I can say from considerable experience, that there is nothing necessarily unhealthy in it.

Bronchitis.—A receipt gives the following as a cure for the bronchitis: Take honey in the comb, squeeze it out and dilute in a little water, occasionally moistening the lips and mouth with it. It has never been known to fail, in cases even where children had throats so swollen as to be unable to swallow.

FOREST-TREES.

HEREWITH we publish an article from the *Ohio Cultivator*, on raising forest-trees from seed.

One of our subscribers requests us to furnish instructions for raising chestnut, walnut, and locust-trees from seeds. This is a subject of much importance to settlers in prairie countries; and even in many parts of Ohio, it would be well if farmers would plant a few acres of their grounds with forest-trees for the prospective wants of their children, if not for their own benefit. In some parts of the State there is already quite a scarcity of timber for fencing and building purposes, as well as for fuel, and good woodland is worth more per acre than that under cultivation.

The first thing demanded, on the part of those intending to plant forest-seeds, is to select such kinds of trees as are best adapted to their soil. Much labor has been wasted by neglecting this precaution; and all the instructions we have seen in books and papers in regard to this business have been defective on this point. It has been stated, for instance, that chestnuts can be raised with the greatest ease from seed; and many farmers have been induced to try the experiment, but have very generally failed because their soil was not of the right kind.

A deep, sandy, and dry soil, is requisite for the successful growth of the chestnut; and it is vain to attempt to make it thrive on soils of an opposite character, as we know from repeated experiments. The black walnut and butternut thrive best in a deep, rich, clayey, and gravelly loam, or what is commonly known as deep limestone soils. The same kind of soil is best suited for the sugar-maple, but this tree will flourish on a greater variety of soils, and requires less depth than the walnut.

The hickory will bear a strong clay soil, better than most other trees except beech. Neither of these is well adapted to the rich, mucky or sandy soils of the prairies. The oak, in some of its varieties, will flourish on most good soils, not too wet or mucky, but is of too slow growth for our fast people. The locust, on account of its rapid growth, valuable timber, and adaptability to various soils, is perhaps the most useful of all—but unfortunately it is so liable to be destroyed by the borer that it can not be relied on in many parts of our country.

Saving and Sowing Seed.—Chestnuts, walnuts, and similar kinds of tree-seeds, should never be suffered to become perfectly dry before planting. If not convenient to plant them soon after their time of ripening, they should be put in a box of sand, and kept moist, (not wet,) and be allowed to freeze during the winter, then planted early in the spring, covering them about two inches in depth. They may be planted where the trees are to remain, taking care to keep the plants clear of weeds and grass while young; or they can be transplanted when two or three years old, taking them up carefully, without injuring the roots, and not exposing them to drying while out of the ground.

Locust-seed may be kept dry, for a year or two, without destroying its vitality, but it must in all cases be thoroughly *scalded* before sowing, or it will lie a whole year in the ground without vegetating. For a quart of seed pour on four quarts of *boiling* water, and let it stand for 12 or 24 hours, when most if not all of the seeds will be swollen to several times their former size. If a considerable portion are not swollen, they must be scalded again. Stir

the seeds while in the water, so as to agitate them briskly, and while in motion pour off the water and swollen seeds, while the others being heavy will remain at the bottom of the vessel; then scald, and let soak as before, and they will generally all swell. The seeds can then be sown where designed to remain, or in a nursery-bed, and the trees transplanted when *one year* old.

ROOT-CROPS.

The following remarks by Rev. J. Fletcher, at the American Farmers' Club, are to the point. He said that he first commenced by the cultivation of equal portions of ground with ruta-bagas, carrots, and beets, but he soon found that it was more labor to raise ruta-bagas than beets; they did not insure any larger crops, and in his estimation they were not worth, especially for milch-cows, more than two thirds as much. Late years he had made beets and carrots his main crop; when they failed, had filled up the rows with ruta-bagas. At first, he sowed after a hoed crop when the ground had been made very rich, and cultivated deep, but he found considerable difficulty in subduing the weeds in his root-crop by this method of culture. He afterward sowed on an enriched clover-lay, well pulverized with the cultivator and harrow, and found less difficulty with the weeds; seemed to have an equally good crop. This was on a light sandy loam.

Since coming here, he had tried carrots and beets, both on green fallow and inverted green sward; the soil a gravelly loam; found that they were considerably the most productive on the former. The roots require a rich, deep soil, well broken, and pulverized by the plough and cultivator. It is better, however, to make the soil rich by previous application, than from the addition of manure at the time of sowing. Freshly-applied manure will not only produce forked and fibrous roots, but the evaporation ensuing from the fermentation of it is inhaled by the leaves, which are the lungs of the plant, and the free circulation of the absorbing powers is thereby checked, and the plant becomes diseased—first the leaves and then the bulb. It may be well to inquire whether, in part at least, this has not been the cause of the failure of the ruta-baga crop in this vicinity the past year.

He had found that the application of salt to the soil, at the rate of about six bushels per acre, had increased the yield of these roots. Had used poudrette and guano, trenched in the rows, several days previous to sowing the seed, and with good success. The rows manured with the guano produced the greatest yield. Carrots and beets should be planted as early as Indian corn, in rows two feet apart. The beet-seed should be soaked two or three days in warm water previous to planting. Carrot-seed should be mixed, and well rubbed with coarse sand, to prevent their adhering to each other, and a few radish-seeds should be planted with them; they will shoot up quick, and indicate the rows, so that they may be weeded out much earlier, and in the end save much labor. Of the carrots, the Altingham, or White Belgium, were the best kinds for field culture. Of the beet, the Mangel-Wurzel, or White French beet. After the first weeding, they may be cultivated with the horse and plough. A soil that will produce fifty bushels of corn, will easily yield seven hundred bushels of these roots, without much more expense of cultivation.

He regarded the carrot as the best food for the horse, and the beet for the

cow, as the latter contains about one third more saccharine matter than the carrot. According to Payen, the white sugar-beet has about 10 per cent of sugar, carrots have from 5 to 7 per cent, and turnips but 2 per cent. The mucilage of the carrot renders it peculiarly adapted to the horse. After fifteen years' experience in feeding carrots, and extensive observation on the subject, he believed it answered admirably as a part substitute for oats. Where a half bushel of oats is given per day, a peck may be taken away, and their place supplied with the same amount of carrots, and the health and condition of the horse improved by the exchange. Independent of its nutritive properties, one of its uses is to lubricate the vascular organs, and thereby promote a healthy action of the system

STATISTICS OF CHICAGO.

We find the following compilation of statistics in relation to the city of Chicago, in the *New-Castle Courier:*

Chicago.—As we soon expect to be connected with this city by railroad, our readers are doubtless desirous of knowing something about its population, its business, and its prospects for the future. The *Chicago Press*, in an article on this subject, says:

In 1848, the ratio of the increase of the population of this city was, for eleven months, 19 per cent; in 1852, the ratio for fourteen months was 22 $\frac{3}{4}$ per cent. These were considered wonderful, but dwindle into insignificance when placed beside the increase of the last year. In August, 1852, Chicago had 38,733 inhabitants. In December, 1853, it had increased to 60,652, being an increase in fifteen months of 57 per cent! In 1840, the population of Chicago was only 4479.

At this time cars are running to and from that city on *ten* roads; *thirty-seven* trains arrive and depart daily. Most of these roads are being extended every day. During this year several of them will have reached the Mississippi; the Great Central Road will be completed to Cairo.

In 1840, the total value of real and personal property was $1,829,420; in 1853, it is $16,841,831. In 1847, the business of Chicago amounted to $2,641,852 in imports, and $2,296,299 in exports. In 1852, the imports increased to $8,328,639, and the exports to $10,709,333. These items are interesting, showing the rapid growth of a city destined to be the largest city in the West. Estimating the increase of the next fifteen months to be equal to that of the last, Chicago will have at the end of that time a population of upward of 83,000.

The following table we copy from the same:

Total population of Chicago,		60,662
" dwellings,		7,627
" families,		9,435
" white native population,	29,134	58,548
" " foreign "	29,404	
" colored "		583
" stores and business-places,		1,184
" schools,		54
" churches,		61
" manufactories		196

PRODUCTS OF THE FRENCH COLONIES IN ALGIERS, AT PARIS.

THE European population of these colonies is 130,000, of whom 80,000 live in towns and 50,000 are devoted to agriculture; but they are unskilled in the art, and are not provided with the best implements. Among the products exhibited at Paris from these colonies are the following:

COTTON—The culture of which is encouraged by the French government. The first experiments were made in 1846. In 1852, 1500 acres were planted for this crop, but it was much injured by the rains, and nearly destroyed. Georgia Sea-Island appears best suited to the soil and climate. The culture of this staple can only be maintained by the help of the government.

WOOL.—The samples were from the native African sheep, and the quality is desirable.

TOBACCO.—These samples were numerous and well grown, but of inferior flavor. There are now about 600 planters of tobacco, the cultivation having been commenced in 1844. 500 hectares, equivalent to about 1166 acres, are now grown, which produce some 500,000 lbs. of tobacco.

CEREALS.—Grains are produced to some extent. Rye is but little used, but produces well. The wheat is good. Barley is the most important of these crops. The Arab and his horse live upon it. Mohammed said, "Every kernel of barley given to a horse is worth an indulgence in the other world." Barley is also used extensively in brewing.

MINERALS.—In this department, iron, copper, lead, antimony, carbonate of zinc, manganese, and mercury, were exhibited. Copper-mines are numerous, and many of them are worked by English companies. Fuel is too scarce to work them, and the ores are sent to England. No coal has been discovered; but plaster of Paris, alabaster, porcelain-clay, and soap-stone, are found. Fine varieties of marble occur. Some of these are equalled only in whiteness by the marble of Carrara.

The Coral-fisheries are extensive and profitable. About 1,500,000 francs' worth are annually taken from the sea.

GRAND NATIONAL CATTLE-SHOW.

A GRAND National Cattle-Show will be held on the 25th, 26th, and 27th days of October, under the direction of the United States Agricultural Society, in the city of Springfield, Clark County, Ohio. No less than SIX THOUSAND DOLLARS will be distributed in premiums, for the best stock of the various breeds of cattle there exhibited. We commend it to the attention of all who can be present.

The following circular will give further information in relation to this grand national farmers' jubilee:

The Executive Committee of the United States Agricultural Society have been careful to select a time that will not, so far as they are aware, conflict with any of the State Fairs or other meetings of general interest; and after due deliberation have selected this place as the most eligible for holding the Cattle Fair. Springfield is centrally located as regards the cattle region; it is most convenient of access by railroad from almost every point of the com-

pass. The means for accommodating, at very moderate charges, a large number of persons, are ample. Private houses will be opened for the reception of guests. There are also eighteen cities and towns within reach by an hour's ride on the railroads, on which extra trains will be placed to accommodate such as wish to go elsewhere for lodgings.

About twenty acres of ground have been inclosed, and more than three hundred stalls will be prepared for the shelter of cattle during the Convention.

It is expected that very liberal arrangements will be made by all the railroad companies, both for the transportation of cattle and the conveyance of passengers to and from the Fair.

We respectfully solicit your attendance on the occasion, and that you will furnish such aid as you may feel disposed in making known the objects, time, and place of the Convention; and if you have improved stock of cattle, of any description, we cordially invite you to enter them for competition.

A list of premiums and a copy of regulations will shortly be published.

Very respectfully, yours,

J. T. WARDER,
C. M. CLARK,
CHANDLER ROBBINS,
Local Exec. Com.

ASPARAGUS.

THE editor of the *London Gardener's Chronicle* says that information on procuring a good supply of this excellent vegetable is much needed, if the article offered for sale is considered. The growers of this vegetable ought to recollect that the two points of excellence in growing it are succulence or size. It ought to be as thick as the thumb and as brittle as glass. To secure this result, two things are indispensable: it must be produced by very vigorous plants, and it must grow very rapidly. The weed-asparagus differs as much from the cultivated plant as the lean, half-starved, half-wild animal does from the large, full-fed one. Feeding makes all the difference either in plants or animals. Experience shows that its great strong roots take up any quantity of manure if applied at the right season; and that season is after it has begun to move in the spring. Manure applied at any other time is resolved into a fat, oozy slime, that only aids to rot the roots of the plant. The exuberance of growth of the stems and leaves ought to be cherished during the summer, and if any method can be adopted to prevent the growth or ripening of the berries that contain the seed, so much the better. Every one of the little thread-like leaves ought to be left to grow, as they add to the strength of the plant. Small as these leaves are, and slender as the branches are, they aid in giving vitality to the plant, just as much as the broad leaves of the largest forest-tree. If this treatment be followed out, there will great buds, as large as acorns, be seen in clusters on the crown of the roots at the next season, out of which will grow the gigantic shoots on the succeeding spring. But to have the asparagus plants vigorous enough to do this, no crop must be taken from them before they are of sufficient age to bear it. The older the plants before a crop is taken from them, the better. Indeed, to obtain real giant-asparagus it is necessary to let the beds rest one year after a crop has been taken from it, and to cut only biennially.

LIBRARY ASSOCIATES

The asparagus being brought to the necessary state of vigor, the next question is, how to secure the necessary succulence, which it never has beyond two or three inches in the English markets, and seldom more than that anywhere else. That succulence will depend upon temperature as much as upon other causes. The warmer the asparagus-bed is kept while the sprouts are rising, the more brittle they will be, provided the temperature does not rise above 85° Fahrenheit at the most. Under ordinary circumstances, every thing is done to keep the asparagus-bed cold; buried twelve to thirteen inches below the surface, the influence of the sun is but slowly and imperfectly felt. It is only when the roots are lightly covered by some rapidly-conducting material, that the sun can exercise his proper influence unassisted by artificial contrivances. Hence one of the greatest faults the asparagus-grower can commit, is to bury his plants deep. The intelligent grower just covers his plants with soil resting upon a deep bed of nutritious matter. The earliest rays of the sun are felt in such a case, and as soon as the dormant energy of the plant is roused, it continues to be exercised without interruption. Asparagus thus obtained is green, and so it should be; but the evidence of the senses of those who try it will satisfy them that these suggestions contain the true principles of growing this plant, which is a source of profit to the market-gardener in the spring, and which is welcome on every table.—*Mich. Far.*

BRECKINRIDGE CANNEL COAL.

Professor B. Silliman, Jr., read before the American Scientific Convention at Washington, last week, a paper on the Breckinridge Coal-field of Kentucky, of which the following is an ample summary:

The great Illinois coal-field, it is well known, crosses the Ohio and extends over a considerable part of the northern or north-western and middle districts of Kentucky, covering some eight or ten counties in that State, including those of Breckinridge, Hancock, and Grayson, where the speaker had seen it. The aggregate area thus covered by coal in Kentucky has been estimated at 4500 square miles. Almost no efforts have been made to explore this valuable coal-territory until a very recent period. The coal-openings are still very few, and confined chiefly to the banks of the Ohio and its navigable tributaries.

The coals of this region, as well as those of Illinois, generally belong, with some remarkable exceptions, to the class of moderately fat bituminous coals. They have not hitherto been brought into general use, and although the coal-openings at Hawesville and Cannelton are only 120 miles below Louisville, their coals have never yet competed successfully with those of Pittsburgh, although the latter have been floated in flat-boats not less than 700 miles down the Ohio.

Within a short time, however, more attention has been bestowed upon the Kentucky coals, and between the discovery of coals of a very superior quality and before unknown, and the introduction of the railway-system upon a scale of very considerable extent, these are likely soon to become of great industrial importance. Unfortunately, the actual consumption of bituminous coals in the West can be ascertained only in a very general way. It has been estimated by some persons to be equal in quantity to the anthracite and dry

bituminous coals consumed in the Atlantic States. This seems, however, too high an estimate, and it is probable that the amount consumed in 1853 did not exceed 3,500,000 tons. All calculations, however, of the amount of coals consumed in the United States made to-day are comparatively unreliable to-morrow, such is the rapid progress of the development of this element of power. It is only by a comparison of several years that any data can be obtained for the future. In 1847, the whole coal product of all parts of the United States hardly exceeded, it is said, 4,000,000 tons. In 1854, the amount of anthracite coal brought to market did not exceed half a million of tons. In 1853, the amount is believed to have gone very considerably beyond 5,000,000 of tons. It is pretty certain that an annual increasement of thirty per cent in the product of this important staple, is not too high a ratio for its probable increase.

Breckinridge County Cannel Coal.—The coal-measures in this county reach an elevation of about 500 feet above mean high-water of the Ohio River at Cloverport. The strata lie with remarkable uniformity, and nearly horizontal, their dip being south-west, at the rate of about four inches in one hundred feet, or less than twenty feet in a mile. The surface of the country is deeply cut down by the wear and tear of the water-courses, and of atmospheric agencies. The bluffs on the Ohio, at Cloverport, as elsewhere in that region, are composed of a fine-grained, granular sand-stone, loosely aggregated, thickly bedded, of a light-gray color, nearly free from any thing but silica, and easily reduced to a sharp, clean, white sand. No traces of organic remains could be found in it; but, from its position, it must be below the coal. The position and comparative thickness of this bed, and of the other strata observed at this place, may be seen by reference to the diagram on the black-board. It will be observed that *three* coal-seams are shown. The two lower are common bituminous coal, and need not be particularly mentioned in this connection, except to say that the lower bed, (from four to five feet in thickness,) is believed to be the same which is worked at Hawesville. The coal which now occupies our attention is the uppermost member of the series, occurring at an elevation of nearly three hundred feet above the level of the Ohio, and capped by a thick overlying mass of sand-stone and shales. This bed of cannel coal is about three feet in thickness, with a bituminous shale of some ten feet in addition, on which it immediately rests. As a consequence of its position, it covers a less area of country than the lower beds, having been removed in many places by denuding causes. It is to be looked for in the regions where I have seen it—in the uplands and hill-tops, and only there, where the general level of the country reaches a certain elevation.

The northern margin of the coal-beds in the place referred to, lies about nine miles from the Ohio River, to which point a railway has been built. Here a marked change in the topography of the country is visible. The hills become more sweeping, and the valleys less precipitous, while the contour lines wind in graceful and gentle curves around the base of the hills. The upper members of the series at this point furnish a soil of enduring strength, as is attested by the size and abundance of the forest-trees. Numerous small rivulets, the head-waters of Clover Creek, afford ample drainage.

The cannel coal of Breckinridge County is characterized by the following peculiarities, namely:

1. *Its density*, which is 1.14 to 1.16. Common bituminous coal varies from 1.27 to 1.35, and the anthracite from 1.50 to 1.85. The only coal lighter than this, so far as is known, is the so-called "Albert Coal," of New-

Brunswick, whose density is 1.13. The cause of this low density will be sought, chiefly, in the very large amount of volatile matter.

2. *Its Tenacity and Elasticity.*—Coals are usually brittle and inelastic. This is tough, and resists powerful and repeated blows, and rebounds the hammer like wood. The splints of this coal may be sensibly bent by pressure, and regain their original form again. A fissure in it may be sprung open by a wedge, and will close again on withdrawing it. The writer has never seen any other coal with this peculiarity.

3. *Its Electrical Power.*—The Breckinridge Coal becomes powerfully excited by friction, with resinous electricity. This peculiarity may be demonstrated very easily, and has never been before noticed in any other coal, so far as the writer has been able to learn, except in the "Albert Coal" of New-Brunswick, before named. It is not easy to understand why other very highly bituminous coals should not have this property, but such is the fact with a large number that have been tried.

4. *Its Chemical Constitution.*—This has been determined in the usual way, by destructive distillation, with the following results, namely: In 100 parts we have—

	I.	II.
Volatile at Redness,	60.27	64.297
Fixed Carbon,	31.05	27.160
Ash,	8.66	8.470
Sulphur,	a trace	a trace
	99.93	99.927
Coke,	39.71	36.66

A comparison of these analyses with those of other highly bituminous coals, will show that there are very few examples recorded of so high an amount of volatile matter. For example, we find among American coals that the "Albert Coal," of New-Brunswick, yields 61.74; the coal of Chippenville, Penn., 49.80; that of Kanawha, 41.85; that of Pittsburgh, 32.95 per cent.; while the mean of the fat, caking coals of Liverpool is 37.60 per cent. The *Lowmoor* Scotch Cannel, and the Boghead, also a Scotch coal, are the only *ones giving* a higher proportion of volatile matter. In fact, the ordinary proportions of volatile and fixed ingredients in bituminous coals, are completely reversed in the Breckinridge Cannel.

Notwithstanding the large proportion of bituminous matter which this coal contains, it yields nothing to the action of solvents; while the Albert coal yields about 20 per cent to spirits of turpentine and benzole.

As might be expected, this coal yields a very powerful and abundant flame, demanding a free access of air for its perfect combustion. In burning, this coal *does not* coke or cohere, nor does any fatty exudation distill out of it, as in the combustion of the fat, caking coals of Eastern Virginia and Pittsburgh. It appears fitted, above all others in the Valley of the Mississippi yet examined, for raising steam in the cylindrical boilers of the Western rivers, where an abundant and sustained flame is desired. For the same reasons its adaptation for sugar-boiling, stationary steam-boilers, reverberatory furnaces, and glass-works, is very obvious. For private use it possesses the advantage of great cleanliness, not producing any dust or powder of small coal, and not even soiling a white glove in the handling. It does not clinker upon grate-bars, so far as experience has tested it. It is unfit for blacksmiths and iron-furnaces, as it produces so small a coke.

Another peculiarity of the Breckinridge Coal, due to its state of aggregation, is its resistance to injury from atmospheric and mechanical causes; such is its strength and elasticity, that it loses practically nothing in the transportation or handling. It may also be exposed for any length of time to the rains and frosts without the least injury. Those practically acquainted with coals will appreciate this peculiarity without comment. It is well known that not less than 10 per cent loss is occasioned by every handling of ordinary bituminous coals, owing to the breaking down of the lumps; while under the influence of the rains and frosts, the common coals are soon slacked to dust, or set on fire by fermentation of their continued pyrites. In several places where the speaker first uncovered this coal on the hill-sides, its out-crop was found to be clean and sharp, the angles of the coal perfectly preserved, and no "coal-blossom," or dust of decomposed coal, visible in the surrounding soil. A slight rusty discoloration of the outer surface of the coal was all the change visible in it; and half an inch within this surface the mass appeared as clear and bright as when taken one hundred yards from the surface. No better evidence can be obtained than this of the power of this coal to resist atmospheric influences. This character marks itself on the topography of the region. A slight terrace, or projecting ledge, "a bench," as the coal-viewers call it, may be seen marking on the hill-sides the situation of this coal-seam.

In some respects the Breckinridge Coal is like jet. Like that substance, it sustains perfectly well all the mechanical operations of sawing, turning, and drilling, and may be made to assume a high polish. It is easily wrought into various delicate ornamental articles.

The sandstone roof overlying this coal is firm and heavy. In it are seen stems of several species of coal-plants, but not very abundantly. There is no overshade, with abundant plants, as in many bituminous beds. The fire-clay beneath is very firm, and contains seams of flat, argillaceous wire-stems, which appear abundantly after the floor has been thrown out for some time, subject to the action of the frosts. No roots of stigmarial were seen in the floor or roof. This coal appears peculiar in having the stems and pouds of sigillariac imbedded only in the substance of the coal itself. A specimen illustrating this circumstance is on the table. Stems of this sort were seen six feet in length. The pouds are converted into a light-colored pyrites, contrasting very beautifully with the dark ground on which they rest. When a considerable mass of this coal is burned without disturbance, cinders of some size may be found in the ashes, which present, in a very remarkable manner, the reticulated appearance of an endogenous stem, as seen in cross section. This circumstance, together with the other peculiarities of this coal already dwelt on, led the writer to query whether this coal-seam was not composed entirely of the compressed stems of large trees, brought together in the manner of ligurite, rather than that of ordinary bituminous coal, to which it has apparently no analogy.

Petrolium and Coal-tar bells.—At the foot of the bluffs of sand-stone, under the coal in numerous places, coal-tar exudes, sometimes accompanied by sulphur-water, again by chalybeate-water—sometimes without either. It is the occurrence of these springs which has given origin to the "Tar and White Sulphur Springs," a well-known watering-place. Near these springs, but in a place where no exudation is now seen, was observed a heavy mass of elastic bitumen, a specimen of which is here shown. This substance is plainly the product of the exudation of petrolium. It is seen investing the sand-rock and raising the roots of trees, but is now so firm as to require an

are to remove it. It would seem that this substance bears to the petrolium from which it is formed the same relation that resin and pitch bear to the turpentine as it exudes from the tree. It has, however, in its change, lost the power of fusion; it burns with an abundant, smoky flame, but does not melt.

PIKE COUNTY, ILL.

The following is the assessment of this county for 1853:

	No.	Value.	Av. Val.
Horses,	7,476	$331,056	$44 28
Neat Cattle,	17,445	181,871	10 42
Mules and Asses,	457	21,610	47 28
Sheep,	11,521	11,117	96
Hogs,	39,193	87,897	2 24
Carriages and Wagons,	2,862	100,111	24 76
Clocks and Watches,	2,491	15,857	6 16
Pianos,	11	877	79 90
Goods and Merchandise,		128,913	
Manufactured articles,		32,989	
Moneys and Credits,		455,621	
Bonds, Stocks, etc.,		14,185	
Unenumerated property,		210,613	
Total,		$1,592,115	

FRANKLIN COUNTY AGRICULTURAL SOCIETY.

The annual meeting of this Society was held at the City Hall recently, and notwithstanding the unpleasant state of the weather, a large number of substantial farmers were present. Mr. Brush, the President, delivered a very able and eloquent address, after which the following gentlemen were elected officers for the ensuing year:

William L. Minor, President.
Benjamin Blake, Vice-President.
J. Wm. Baldwin, Secretary.
Thomas Moodie, Treasurer.
Messrs. Seymour, Sly, Sullivan, Burr, and Clarke, Managers.

J. M. Sullivant offered the following:

Resolved, That it is with profound regret the members of the Society hear that their able and efficient President, Samuel Brush, Esq., peremptorily declines a reëlection.

Resolved, That this Society have a high appreciation of his valuable labors in their behalf, and hereby tender him their hearty thanks for the good he has accomplished for the cause of agriculture in Franklin County.

Resolutions were also passed in relation to the arrangements of the next Fair, and also to print the address of the President.

THE SHAKER BARN.

At Enfield, N. H., the society of Shakers have projected, and have in good progress, a granite barn, two hundred and fifty feet in length, by fifty in width, (for the accommodation of fifty choice cows,) to be roofed with slate from Wales. Mr. Henry Elkins, the designer and architect, estimates the cost at $15,000, and gives the following description of it:

The location and arrangements of this barn-edifice are in many respects peculiar, and in all respects admirable. Its outer walls are of stone and its roof of slate. It is located across a gentle ravine, opening from bank to bank; and is so arranged that teams laden with hay or straw may enter at either gable, precipitate the load to the bay below, pass on, and make their egress at the other end. Such a situation has enabled them to extend a cellar its whole length for the reception of the manures both solid and liquid, which are kept from filtration, or otherwise escaping downward, by a plank-floor laid upon a stratum of clay, wrought as a bed of mortar. The descent of the ground upon the back-side of the barn, renders ingress and egress to and from the cellar convenient and easy for carrying pond-mud and manure. The cows will be tethered all upon the south side of the barn, and in one continuous longitudinal stable, sixteen feet in width, with walls plastered inwardly with lime-mortar, and leaving a walk behind the gutters, of four feet in width, and a corridor or passage between the cribs and mows on the north side, (which now preserves the warmth of the barn throughout,) sufficiently wide for a horse and cart to pass; which is often convenient, when feeding with green food.

The scaffolds above the cows are a best depository for litter, which is let down through a trap-door in the rear of the cows, and when partitioned into rooms serve as a place for meal, grain, and also for a herdsman's office. All these arrangements render it, perhaps, the most convenient as it is undoubtedly the most expensive barn in America. Its height to the eaves upon the back-side is to be thirty-four feet; stables, eight feet, (including timbers,) and scaffolds, sixteen feet. Flooring for teams framed four feet below the eaves.

HORTICULTURE.

We present to the lovers of beautiful flowers the following instructions in reference to a very pretty family of flowers. We take them from a treatise in *The Horticulturist.*

The Daisy Chrysanthemums.—If you would like to bloom them in the open ground, put them in a *dry, warm border;* under your south windows would be a good place, if there are no trees in the way to hide them from the sun. Some of them bloomed earlier than others; for instance, *Sacramento, Autumna, La Gitana, Solfatare, Poulidetto,* etc., all pretty, and good bloomers, within doors or out.

If you would like to bloom them in your parlor or green-house, in May take strong cuttings from those in the open ground, place them in the sunniest spot in your garden, where they can remain until August or September, allowing them, of course, plenty of room. In such a place the plant will break freely, and have a fine, bushy top, without pinching at all; and these

plants will retain their lower leaves better on account of being in the open ground. Or, when your cutting begins to grow, you may cut it off within an inch of the ground, and it may become still more dwarf, and perhaps have a large number of flowers. Pot them in August or early in September, in good, rich mold; water once a week with manure-water, or a solution of nitrate of ammonia. If they mildew, syringe them with sulphur-water; or, if you have no syringe, just before a shower comes on, sprinkle them well with sulphur. Remove them to the house before there is danger of sharp frosts, and keep them out as long as you can, especially if they are intended for the parlor. After two or three hard frosts, perhaps, they might safely remain out for one or two weeks. After this, a south window in the parlor is probably the best place for them. In December or January, after the bloom is over, you can put your plants in a cold, frosty room; and if you want the pots, turn the plants out and place them close together, cutting off the tops, of course. Or, if you have the heart to do it, throw your plants away, and return to your garden in the following May for a fresh supply. In this way you have the plant in pot about three or four months, and that at the time when you think less of the trouble on account of the flourishing buds and beautiful blossoms.

THE DAHLIA.—This plant should be started in the parlor or conservatory, very early, and set in the open air about the first or middle of June, according to the season. It will not bear the frost. Give each root about four feet of space, and water the entire plant freely. Strong plants raised from cuttings, are better, for a show of flowers, than old roots. Turn out of the pots without disturbing the roots, and guard them with a stake as it grows. The following list of varieties is recommended in *The Horticulturist.*

Agnes, (Edwards,) pure white.
Aurora, orange-buff.
Bob, (Drummond,) vivid orange-scarlet.
Grand-Duke, (Turner,) bluish-lilac.
George Villiers, (Union,) dark purple.
Miss Caroline, (Brittle,) white, slightly tipped with purple.
Morning-Star, (Turner,) orange-scarlet.
Plantagenet, (Turner,) purple, shaded with lilac.
Sir John Franklin, (Turner,) buff, with salmon at the base of the petals.
Sir R. Whitlington, (Drummond,) ruby-crimson; a large, perfectly formed, superb flower.

Fancy varieties, (so called,) striped and tipped.
Beauty of the Grove, (Burgess,) salmon-buff, tipped with purple.
Claudia, (Lochner,) violet-purple, tipped with white.
Douglas Jerrold, (Keyne,) buff, edged with scarlet.
Duchess of Kent, (Knight,) pale-yellow, tipped with white.
Queen Victoria, (Wheeler,) yellow, distinctly margined with red.
Unanimity, (Edwards,) scarlet, and deep yellow in regular stripes.

THE PIE-PLANT.—A correspondent of the *Indiana Farmer* expresses the opinion, based upon experiment, that the use of ashes as the manure for the pie-plant, produces a more delicious plant than any other mode of culture; not being as sour, but containing just enough acidity to make them pleasant. The reason given for this is, that the acid peculiar to the rhubarb is neutralized in part by the alkali of the ashes.

PROGRESS OF MECHANICS.

THE ART OF PRINTING.—Printing from blocks is supposed to have been invented in 1422. The earliest printing from any wood-block, of which we have a date, is in the collection of Earl Spencer. It is the representation of St. Christopher carrying the infant Saviour across the sea. It bears this date. It was discovered in a German convent. From cutting whole pages, of entire blocks the step was easy to cut letters separately, upon wood, and the next, on metal, and this was followed by forming matrices or moulds for casting each letter separately.

Conrad Saspach was the turner who made the first printing-press. This he did under the direction of John Guttenburg, a man of illustrious family, who, in the revolution of Metz, retired to Strasburg, where he made his first experiments in the art of printing. This press was constructed in 1436.

At his death, his machine, having fallen into the hands of some of his relatives, became the subject of a lawsuit. The trial was had in December, 1439, and five witnesses testified that Guttenburg was the first person who practised printing by movable types.

Guttenburg's first notions in printing are said to have been suggested by impressions made by the seal of his ring upon wax; and his first ideas of a printing-press, by carefully observing the action of a wine-press. Shœffer, in conjunction with Faust, was the first who invented metallic types.

The precise position occupied by various persons connected with these inventions is by no means clearly ascertained. Several persons are brought forward as worthy of more especial honor, but it is established beyond dispute that Guttenburg produced the first printed book, and hence he is universally called the FATHER OF PRINTING, and Peter Shœffer, already mentioned, the FATHER OF LETTER-FORMING, and John Faust the generous patron of the infant art.

The Metz printers were sworn to secresy, and their secrets were kept inviolate till 1462, when the city was sacked and plundered by Archbishop Adolphus, and the workmen were scattered in all directions. Each then considered himself independent, and freed from all the obligations previously assumed. Guttenburg died in 1468.

The first printing-presses were of wood. The power was a screw, operated by a lever, as in modern hand-presses.

Improved presses came into general use in Holland several years before their introduction into England, and the first important change in their construction was wrought by an ingenious artist named Wm. Jansen Blaeu, of Amsterdam. These improved presses differed very little, in their principles, from those of modern times. The spindle and its connections have been the chief point of improvement. Two pulls were required, especially for large forms.

Wooden presses were then superseded by those made of iron, the invention of Earl Stanhope. It had before been attempted to introduce a compound power into the wooden press, but it was incompetent to bear so great a strain. The French had, however, constructed a press, worked by a long lever, which proved to be of little value.

Earl Stanhope's press was completed in 1800. The handle was attached to a rod which crossed the platten, and the rod was connected with the spin-

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dle by means of machinery. The carriage rested on wheels, which ran on a straight edge. He took out no patent, but left the whole field open to all who chose to enter it.

This press was modified by the introduction of the Sector-press, in which the sector was substituted for the screw, and by having a large screw fixed in the head of the press, for regulating the power of the press.

The next invention was Cogger's Press, erected by Cogger & Scott. This consisted of two upright pillars of wrought-iron, upon which the cast-iron head was screwed. It had sectors, and a screw in the head for the purpose of regulating the power, similar to the first patent. The platten was secured by two rods, passing through the head and till, and fastened to the platten by small pins. The platten was returned by the power of two spiral springs. The power was a compound-lever, like that of Earl Stanhope.

The Ruthven press, the next claimant for public favor, was nearly square. The table was stationary, the platten drawn over by the hand, being supported by two iron springs, under which were four brass bevelled wheels, which ran on two pieces of bevelled steel. When the impression was taken, the springs yielded. The power was regulated by nuts upon screws on the top of the head. The works beneath were complicated.

The Russel press, and the Albion press, invented by Mr. R. W. Cope, followed in order, and are still in use. The latter is in high repute, but can not be properly explained without a diagram. It is claimed for this press that it has superiority over others in being better adapted for expedition, the bar being attached to the near cheek instead of the off one, as in the Columbian, and having about a fourth of a circle to traverse, and for its simplicity of construction, the ease of its pull, and the comparatively small weight of metal which it requires.

Hydraulic presses were first introduced to the public about 1810 or 1812, by Mr. Bramah, of Piccadilly. Since the expiration of his patent, various improvements have been introduced, which render them of great value.

Thus far we have referred only to English patents.

One of the earliest inventions in this country, in this department, was that of Mr. George Clymer, of Philadelphia, called the Columbian press. In 1817 he visited England, and an examination of his press led to the conviction that it was a valuable improvement upon those previously in use, and it was introduced at once into several of the large establishments in London, and of course they soon were scattered in many other places. It is said to be better for heavy work than for light jobs, and not so expeditious as are some others of a cotemporary period. This press was used in England, in preference to all others, for printing a most singularly splendid work in letters of gold, of the august ceremonial of the coronation of "his most gracious majesty, George the Fourth."

Further improvements and original inventions connected with the printing-press, by our own citizens, must be reserved till our next number.

Stereotyping.—This art, in its infancy, is somewhat involved in mystery. In 1728, Wm. Ged, a goldsmith of Scotland, turned his attention to this subject. He made a contract with two persons, named Fenner and James, who obtained the patent for the University of Cambridge, which was made out in the name of Fenner. On his death, the University refused to renew it to his widow. The new patentee was ordered to resort to the old process of printing, and the plates of the Bible and Common Prayer were melted down. Soon after, Ged died in poverty. Experiments were afterward made by others. About 1804, it was revived by Earl Stanhope, assisted by Mr. A. Wilson, a

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printer. In the *Monthly Magazine* of April, 1807, it is stated that "Stereotype had not been adopted by the booksellers of London, and it does not appear that more than twenty or thirty works would warrant the expense of being cast in solid pages."

SCIENCE AND THE PEOPLE.

We fully agree to the practicability and utility of the plan proposed by one of our Southern exchanges, as given below. The people can learn a hundred times more than they think they can. They can procure valuable stores of natural history, and collect the substantial memorials of the leading facts in science. We give the following without fee—only—if any of our readers will collect specimens and prepare them as here described. If they will forward to us, postage-paid, a single specimen of each, numbered, so as thereby to be identified, we will return to them the name, habits, etc.—[Eds. P., L., & A.]

Work of the Million.—Every body ought to be engaged in some useful employment, and if an individual can not do this, he can do that, and by his labors add something to the general stock of knowledge, and increase the comfort of all. If a man can not maul rails, or pound the anvil, or penetrate the depths of philosophy, or theology, he can be useful in picking up bugs, and snails, in stuffing snakes, rabbits, and birds, or in collecting the fossil remains of by-gone ages.

In this way any individual who has a leisure hour now and then, might collect, in a few years, a geological cabinet for himself, or do much to increase the store of geological specimens in the institutions of the land.

But says one, "What could I do with bugs, snails, and birds, if I had them? I know not how to prepare them so as to prevent them from smelling, or stop their decay."

Well, we will furnish a few receipts, which, if any one will follow up, he may spend his leisure hours pleasantly and profitably.

We have received from one of the most scientific men of this district, and probably of the State, a few receipts touching the preparation of specimens for geological cabinets, and as we do not know that a "copy-right" has been secured for these receipts, we publish them with the hope that by them some of our friends scattered over the South will prepare for Erskine College a handsome collection of specimens, and send them or bring them on to the next meeting of synod. We are anxious to furnish the college with a splendid museum and a good library, as well as with an endowment-fund, and if the friends of the college, scattered over a wide field, will each lend a little help, a geological cabinet may be furnished, in a few years, not to be surpassed by any thing of the kind in the Southern States. Could not the Alumni of the college each send up a collection of fossils, or recent specimens, rare and valuable, and thus increase the advantages of their alma-mater? The students in attendance might do something to increase the geological cabinet.

In order to preserve bugs with hard-wing cases, such as the "big-bug," or beetles that buzz about at night, and also the bugs with thin or nerved wings, (Neuroptera,) such as the Dragon-fly, or "Devil's darning-needle," as vulgarly called, let them be placed for a short time in boiling water, to extract the oil out of them, then put them for *ten days* in the following solution, namely:

1 quart alcohol, 2 oz. gum-camphor, 2 oz. arsenic, ½ oz. corrosive-sublimate.

To prepare snakes, lizards, and the like: Skin them by making an incision lengthwise in the belly, and drawing the body or flesh through that incision. This will be apt to turn the skin inside out, but turn it back *immediately*, for it may be difficult to do so if allowed to stand. Cut the body off at the head, leaving the head unskinned; then place the skin in the above solution ten days, then stuff it with fine chopped cotton, dusting it inside with a little dry arsenic.

All crustaceous animals, such as the craw or crayfish, are to be prepared in the same way, by placing them ten days in the above solution, without extracting the viscera or bowels. It should be remarked here, that the molluscous or soft matter in a snail may be readily extracted *after* taking it out of the boiling water, and before placing it in the above solution, by crooking the point of a pin and hooking out the soft matter. The whole may be looked upon as a "pin-hook" business; but no one would think so, if he could see the splendid collections that have been made by little and little, and the valuable information thus acquired.

We do not understand that the crustaceous animals are to be placed in boiling water, but only in the solution, and then neatly fixed on boards or in small boxes. with a glass cover, by headless pins. So with the bugs.

To prepare fishes for preservation: Skin them, dust them plentifully inside with dry arsenic, or rather *rub* it in, stuff with chopped cotton to the natural size, having measured them before skinning, wash outside with spirits of turpentine, varnish with tableau (?) varnish. Small fish may be put in the above solution, without skinning or extracting the viscera.

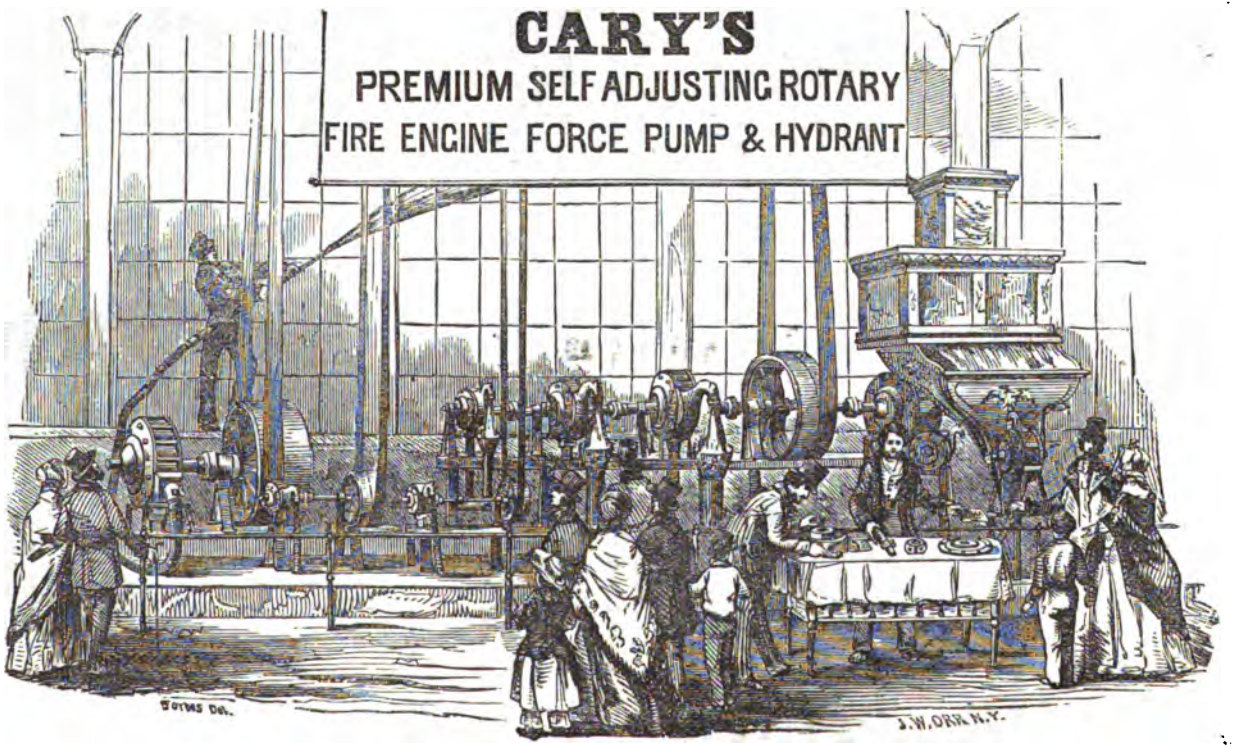
To prepare quadrupeds, such as squirrels, minks, rabbits, and the like: Skin them by making an incision in the belly lengthwise, take out the flesh and bones, leave the skull in, but skin it and place dry arsenic between the skull and the skin.

Take the exact measure of the animal before skinning, so that when stuffed to the same size it may look natural. Make a wire-frame or body, running the wire through the legs and feet so that it can be fastened to a board, dust the inside well with arsenic, stuff with tow if it can be had—it is better than cotton. In taking the tail-bone from the skin, be careful not to pull out the hair of the tail, as that will disfigure the animal. By entering a clamp or something at the root of the tail, the bone may be extracted.

To prepare birds for a museum: Skin them, making an incision lengthwise, as in quadrupeds, take out the body, leave the bones in the wings, dust well with arsenic, make a wire-frame, if you can, as in quadrupeds, stuff with tow or cotton, take the measure of the bird before skinning, wash or dip the legs and feet in the above solution; after stuffing, wrap the bird round with thread a number of times, and let it remain so for several days, so as to give the proper position to the feathers and wings.

To prepare plants and flowers: Dip the plant, or sprinkle it with the above solution, put them between the leaves of paper that will soak up the moisture. Newspapers will answer. Press them by laying a weight on them, exchange them daily, from one file or book of newspapers to another, until they are dry, then lay them away between the leaves of a blank-book, and give them a name, or get a botanist to name them and arrange them.

There will not be much difficulty, if any, in using the above *solution*, but the operator should be careful not to inhale too much of the dry arsenic; though it is said to be wholesome, and will cure a man of the chills to prepare specimens with arsenic. It will hurt the fingers a little if not carefully used. Insects will destroy the preparations, unless arsenic or the above solution is used. All hands to work, then. H.


CARY'S
PREMIUM SELF ADJUSTING ROTARY
FIRE ENGINE FORCE PUMP & HYDRANT

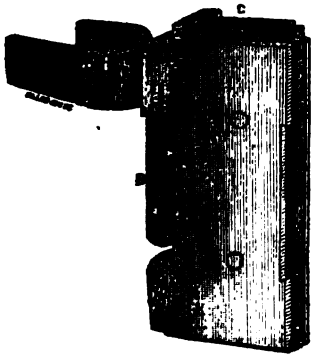
CARY'S PUMPS

The visitors of the Crystal Palace, who have only entered the Machine Arcade, can not have failed to notice the system of pumps which are constantly throwing streams of water, under glass, through a variety of pipes attached to different parts of the machine. The engraving hereto annexed is a fair representation of this compound machine. A jet is thrown perpendicularly from the top, and a handsome cascade, which would be beautifully ornamental in any yard, beneath the upper oblong box, is constantly in action, while other jets are added at pleasure. The following is a simple description of this efficient contrivance.

The peculiar points of this pump may be briefly stated as follows:

It is perfectly simple. No part of it is complicated, or liable to get out of order. The general construction of its interior is seen at a glance, in a rough engraving in the margin of the advertising pages of this journal.

The valve or piston is peculiar, and is shown in the margin. The letter C represents the packing in the end of the valve cut in the form of a T, and raised up out of its place; like all the rest of the packing, the best and thickest of sole leather is used after being well hammered. A is a piece of the same kind of leather drawn tightly into the edge of the valve. B, the button on the back-side of the valve, is represented as being fitted into a *recess* with two legs fitted into holes in the same, and sprung out about an eighth of an inch by means of spiral springs. When a pump is new, and the valve in its place, the button B is pushed up snug to the valve, and as the packing wears, the spring pushes the valve forward till the packing and edge of the valve at A is worn down to the edge in the recess at A. Some valves are made without this recess; in that case, the packing will not wear as long, as nothing wears but the leather; but of late an addition of metal has been added all the way on the back-side, and a part of the way on each end on the front side, to protect the leather and render it more durable; and therefore when it wears down, the metal on the back-side and two ends on the front edge as low as the metal at the recess at A on the front side, it will want packing.



The pump is powerful. A moderate application of force gives a liberal flow of water. We have seen a jet thrown some two hundred feet, through a discharging pipe of more than an inch in diameter. The stream was converted into spray, and fell upon the top of the palace like a shower of rain.

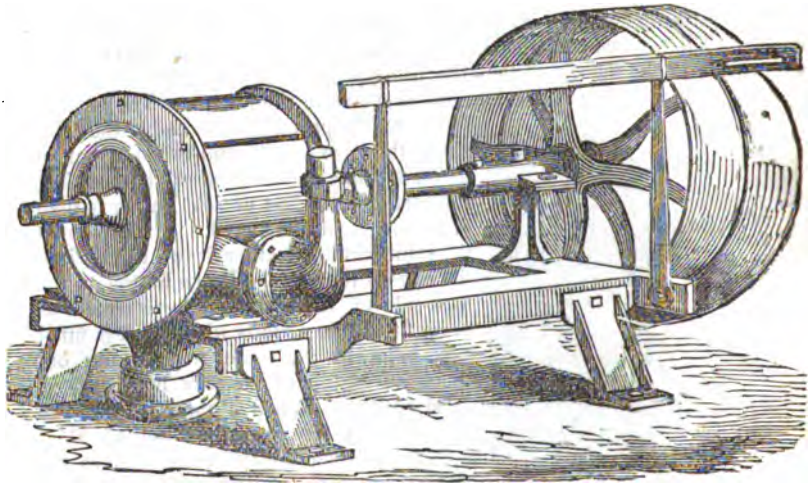
There are different sizes and patterns. One is designed for a domestic fire-engine. It is used for all ordinary purposes, wells, cisterns, etc. By a very simple arrangement, a hose can be attached to the nozzle and used for extinguishing fire about the premises, or watering the garden. By having a supply of hose on hand in some convenient place, where it could be attached in a moment, with one man to turn and one to manage the hose, in nine cases out of ten a building might be saved, not only from destruction by *fire*, but from being *flooded* with water by common fire-engines. A person having

one of these pumps, with sufficient length of hose to reach the top of his building, if his neighbor's buildings are on fire, can mount his own and thereby save it from destruction.

The manner of putting up the above pump is as follows: By just erecting a standard, by mortising into the floor or platform a post (say 4 by 5 inches) braced well at the bottom with iron braces. The holder is then screwed on, so that when the pump is set in, the shaft will be 2 feet 8 or 10 inches high.

Another form is of bell-metal, for ships. It is extensively used in steamboats, and is found to answer a very useful purpose. This form is well adapted to machine-shops, furnaces, and small factories.

The following is one form of arrangement of this pump, showing the wheels for belts to drive the shaft or axle of the pump:



These pumps are made with the discharge either from the top or the side; that is, either perpendicular or horizontal; and one form of it, at least, which is 14 inches in diameter and 8 inches in depth, is provided with a flange for bolting on iron pipe.

One size is as follows: Inside diameter, 10 inches and 5-16ths; depth, 4⅞ inches. Another, 12 inches diameter and 7 inches deep.

The following is an extract from the annual report of the officers of the State Lunatic Asylum at Trenton, N. J., for 1853, in regard to the manner of furnishing water for the building:

* * * A steam-engine of 12-horse power, constructed by Wm. Burden, of Brooklyn, N.Y.; a cylindrical boiler, with one 14-inch flue for generating steam, furnished by the firm of Vancleve & McKean, of Trenton; a forcing-pump, acting on the rotary principle of Cary's patent, Brockport, N.Y., and a cast-iron pipe six inches in diameter, through which the water is forced from the engine-house through the space of 1000 feet to the receiving-tanks, four in number, in the dome of the main building. It may also be mentioned that these tanks together, contain about eight thousand gallons. In addition to the foregoing, the ground about the spring from which the water is obtained, is situated seventy-two feet from the pump, and thirteen feet below it. * * * * * The apparatus is very efficient, raising water at easy

working speed, through the distance mentioned, one thousand and seventy-two feet, and with a perpendicular of one hundred and twenty feet, at the rate of ten thousand gallons per hour. The advantage of an apparatus capable of supplying water thus rapidly, is found in the economy of time required for its attendance, and also for its great efficiency in case of fire. In connection with the last mentioned application of its power, it may be remarked, that it is designed, by means of outlets, for attaching hose in the main and in the branch pipes, placed a few yards distant from the building, to be able at all times, and with short notice, to apply the whole force of the engine and pump, in supplying water at any point of the building required. This we regard as the best possible security against destruction or damage by fire, and would be of itself a sufficient justification of the entire expense incurred in the completion of the work.

The representation of the interior of this pump may be seen in the engraving annexed to an advertisement in that department of our journal.

DESCRIPTION OF A PIGGERY.

The following is a description of the Piggery of Dr. Morton, of West-Needham, Mass.:

Fig. 1 represents a front perspective view of the whole building and pig-yard. The building is 125 feet long by 14 wide, with open or outer pens in the rear, in the second story, opening into a yard. It is of two stories, with glass windows (protected with iron grates) to each pen, fronting the south, and is constructed on the south side of a hill, the lower story being built on an excavation made for that purpose, whereby the pens in that story (which are breeding-pens for winter or early-spring pigs) are protected from the cold northerly winds, and a suitable temperature maintained in them for breeding in the winter when desired, without the use of artificial heat, by the rays of the sun shining through the glass of the windows. By this manner of construction, in ordinary winters, there will be found to be sufficient heat maintained for breeding; but, if the winter should be unusually severe, artificial heat may be employed.

Fig. 2 is a plan of the upper story of the building and yard behind. A are the inner pens, and L the outer yards, the latter are in the yard or inclosure Y. Lot Y has a large shed to protect the manure, and communicates with a stream of water. The pigs enter the outer yards from the rear, and from thence to the inner pens, and, if desired, can be secured there by sliding doors which are provided to each pen, though not represented in the drawings. The passage B is four feet wide, and extends the whole length of the building. This intersects the entrance at the rear of the building, and serves as a convenient means of attending to the pigs, feeding, cleaning the pens, etc. E is the swill-room, which is 16 feet long, in which is contained a furnace and boiler, a swill-tub, G, or reservoir, into which the boiled provender is placed, a series of bins, K, which are for holding different kinds of grain, and a place for firewood. Cut through the floor of the swill-room is a hatchway, M, which is for emptying the swill from the reservoir or boilers to another reservoir in the lower story, where it will be convenient for feeding the breeding-sows below. S denotes stairway communicating with the upper and lower story. D, D, end-doors to enter passage B, B, B.

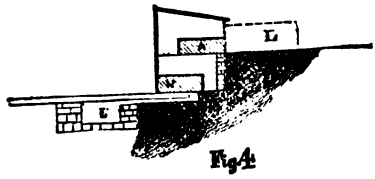


Fig.4

Fig.3

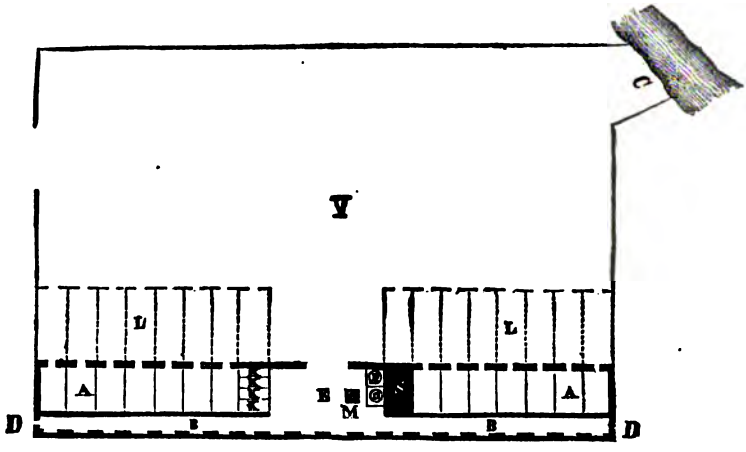


Fig.2

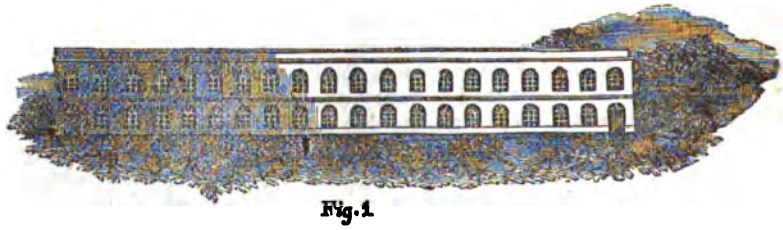


Fig.1

Fig. 3 is a plat view of the lower story, or breeding-pens. N are the pens which have no yard-pens. And the passage B, B, B, extends the whole length of the building, at the rear side, instead of at the front side, as in the upper story, so that the pigs get the full benefit of the rays of the sun through the windows. Those lower pens are entered at the doors A, A, from the front and through the passage B, B, at each end of the building; the pigs entering through either of these doors, pass into the long passage, B, and enter the pens through doors at the rear. S represents the stairs below, aside of which is the reservoir to receive food from the trap-door, M.

Fig. 4, a vertical cross-section of the building. A are the upper pens, and L the outer yards. N, the lower or breeding-pens. The floors of both stories slope so as to drain off the surplus liquid, and render the stalls or pens more easy to be cleansed. These slope in opposite directions: the lower one to the front, and the upper one to the rear of the building, as represented in Fig. 4. I is a reservoir located in front of the building, with suitable conducts leading from the building for draining the lower or breeding-pens. The upper pens are drained from the rear side.

CRYSTAL PALACE.

THE GREAT EXHIBITION is still open, and invites the lover of the useful arts, and the lover of the fine arts, to pass a day or two in its well-filled courts. This, as we have said before, and say now, in reference to its present condition, is no sham affair. There is no humbug about it. Yes there is, too—and the humbug is this, that some of so exquisitely fine taste, and such lofty ideas of what constitutes a show worthy of their notice, are yet to be found in our community, who never have and who never will see so fine productions, in various departments, as are exhibited to-day in the Crystal Palace. These people are themselves the victims of this humbug, this delusion, in imagining that they are acquiring a reputation for great knowledge of what is excellent and beautiful, while, in fact, their own neighbors do not know or care whether they have honored the palace with their presence or not. Others have no idea, at any rate, that a really cultivated taste keeps them away.

'But is the Exhibition still worth seeing?" Certainly it is. We confess to our sad and gloomy reflections, when we saw those beautiful tables of our friend La Roche deserted by him, and deprived of his rich display, the like of which can be seen nowhere else in this country, and the superior of which can not be seen in any country. We were, we admit, positively sad, on our first visit after his departure. The Gobelins, too, were missed, and *that* head of St. John, (none of which, nor any thing to compare with either of these, those exquisites that did "not care to visit" the Crystal Palace, ever saw, or ever will see,) and all these being almost literally side by side of each other, and near the Sixth-avenue entrance—always our entrance—we felt that glory had indeed departed. The beautiful display of silver ware has also, much of it, been removed. Here is certainly a loss. BUT WHAT REMAINS? Acres of the products of finished art; acres of elegant display, of useful inventions, of the best productions of this and of other lands. The statuary is better than that of any gallery in this country. The paintings are superior to any gallery in this country. The ten thousands of things, from the flower composed essentially of diamonds to the "centre-piece" of solid silver; from the watch no larger than a half-dime to the huge steam-engine; from the chair suited to a child's doll, to the best and gayest coach; from the pocket-knife and pocket-pistol through all the gradations to the scythe and the field-piece; from the artificial singing-bird to the church organ; these and others all are there, whether composed of silk, linen, cotton, wool, wood, iron, silver, or gold. All metals are there, and all minerals.

We have referred to what has been removed. Let us now refer to what

LIBRARY ASSOCIATION

has been added. "Four hundred and twenty-nine exhibitors" have contributed toward a new supply of goods. Among these are an extensive show from China, and another from ancient Egypt; basso-relievos, medallions, etc., of Thorwaldsen and other eminent sculptors; elegant carvings in marble; work-boxes, dressing-cases, pencillings, etc., etc. There are also many machines, of far more interest than those taken away, and paintings of far greater merit than most of those removed. PEALE'S COURT OF DEATH used to form an exhibition of itself. It is now in this gallery. But few statues have been removed, though among these were those of the world-renowned Powers. Even here, however, we have a tolerable balance. FLORA, by Crawford, is an exquisite piece of art, unlike all others in the Crystal Palace, and not inferior to any of them. Other specimens of statuary are also among the new entries. In the mass of miscellaneous articles, the additions are too numerous for special reference.

The management is efficient. The arrangements in the building are improved. Refreshments are on sale in various parts of the building, so that no one has a monopoly. Soda-water, ice-creams, etc., may be had on all sides. Don't fail to visit the Crystal Palace.

SCULPTURE AND SCULPTORS.

WE now come to the fifteenth century, and find a more numerous list of names, which will live, with the few already spoken of, as long as art shall exist. In this century, sculpture and painting reached their highest stage of perfection. No brighter names have since eclipsed the glory of this century, nor do we believe such ever will appear.

Antonio and Piero were two brothers born in humble life, differing in age but a single year. The former was apprenticed to a goldsmith. He soon outstripped his companions and became the favorite of his master. To him was committed the execution of valuable works, and the setting of rare and precious stones. He also discovered wonderful art in making figures in silver and bronze. Some of the bronze sculpture on the doors of St. Peter's at Rome, was the work of his hand, and some portions of the celebrated door of San Giovanni at Florence, described in a former number. This was the door in reference to which Michael Angelo exclaimed, "This is worthy of being the gate of Paradise." Antonio afterward applied himself to the study and practice of painting, and he became an excellent painter. He and Piero worked jointly.

ANDREA DEL VERRECHIO was the master of Leonardo da Vinci, and he was commissioned to paint a picture of the Baptism of Christ by John, for the monks of Vallambrosa, having previously painted one for the nuns of San Domenico. When near its completion he was taken sick, and being unable to finish it at the time specified, "I commission thee," said he to Leonardo, "to do thy best on this work, for I have promised it at a certain time, and I see no prospect of being able to accomplish my promise." Accordingly Leonardo tremblingly seized the brush, but his hand grew steady as he painted. "It is for my beloved master I implore skill and power for this deed," said he, as he knelt before the crucifix.

"The work is done, father," said Leonardo; "it only waits for your correction." Andrea, as soon as he was able, was conveyed by his pupils to his

studio. At first, he looked upon the picture in silence. He then threw his arms around Leonardo, as he knelt beside him, and burst into tears. "My son, I paint no more. To thee I commit my pencil and pallet. Thou shalt increase, but I shall decrease;" and from this time he devoted himself to sculpture, united with architecture.

The first great work of his, in this department, was a *San Tommaso*, in bronze. The incredulity of Thomas is perfectly depicted; and also his desire to assure himself of the fact related to him, is expressed in his countenance. There is a mixture of tenderness and of veneration in the manner in which he lays his hand on the side of the Saviour. Soon after this, he was commissioned to execute a work which is still extant, in Rome. A noble lady had died suddenly, in giving birth to an infant, and Andrea was commissioned by her husband to execute a work worthy of the subject. He represented the lady on the stone which covered her tomb, rising with her infant. There is the beauty of an ascending spirit in this figure, to which he added three angels, representing three virtues. This was in marble. He afterward accomplished many works. He was summoned to Venice to execute an equestrian statue, where he took a violent cold and died, at the age of fifty-six.

Leonardo da Vinci was born at Venice in 1452. He was the natural son of Pietro da Vinci, and was brought up in his family. He was less known as a sculptor than as a painter and architect. He was the pride of Andrea del Verrecchio, who, as already described, taught him the rudiments of painting. He excelled also in music and in eloquence. He was called to Milan to paint the Visconti palace. His first important work, after his removal to that city, was the celebrated equestrian statue of Francisco Sforza the First, which he commenced 1483. About the year 1485 or 1486, he was selected by Ludovico il Moro, as the founder and director of the Academy of Art, established by that prince, and it was while he was in his service that he painted his celebrated "Last Supper."

The *padre*, Luca Paciolo, the friend and companion of Leonardo, playfully alludes to his name as indicative of his merits, in a phrase the meaning of which is, "Vinci, in sculpture, casts, and painting, verifies his name."

It is generally supposed that Leonardo introduced the art of engraving on wood and on copper. He died in the arms of Francis the First, at the age of seventy-five, universally esteemed and regretted.

Rafaello d'Urbino was born at Urbino, on Good Friday, May 28, 1483. His father, Giovanni Santi, a painter of some merit, died when he was but eleven years old. He was early apprenticed to Pietro Perugino, at Perugia, a painter of distinction, and his earliest works exhibited remarkable genius. Among these are the Coronation of Mary, now in the gallery of the Vatican, painted in 1502, and the Marriage of Mary and Joseph, called the *Sposalizio*, done in 1504, which is now the chief ornament of the gallery of the Brera at Milan. The latter is taken, with some alterations, from Perugino.

Some admirable pieces of sculpture are ascribed to him, though it is as a painter that he stands unrivalled. Of this branch of art, as illustrated and dignified by his pencil, we shall take occasion to treat hereafter, when we exhibit, more in detail, Painters and Paintings, as we now purpose.

It is not easy to write a single page that shall be a worthy tribute to this great man. A volume is required. We can now give but a very meagre sketch, which we shall amplify hereafter.

In 1514, Raphael was appointed by Pope Leo X. as architect of St. Peter's, and shortly afterward intrusted to him the task of executing upon paper

a restoration of ancient Rome, after the existing remains of the city, and the manuscript accounts of it, still extant. His subsequent history is full of interest. His plan for St. Peter's was abandoned at his death, and his drawings for the restoration of ancient Rome are lost.

Michael Angelo Buonarroti was born at Arezzo, in Tuscany, March 6, 1474. His father, Lodovico di Leonardo Buonarroti Simoni, was the Governor of Caprese and Chiusi. At the proper age, he was sent to a grammar-school at Florence, to receive the rudiments of his education. But instead of being attached to books, he was fascinated by painting, and a pupil with whom he was acquainted, then receiving instruction in this department, lent him designs to copy, and encouraged and assisted him. A head was given him to copy, and so well was his task executed, that he took his own copy to the person from whom it was borrowed, and the difference was not, at first, perceived.

In April, 1488, he was apprenticed to Domenico Ghirlandaïo, and his brother David, painters, for three years, at six florins for the first year, eight for the second, and ten for the third, an honorable attestation of his abilities. Usually premiums were not paid but were received by instructors.

At about this period, a garden was established in Florence by Lorenzo de Medici, which he amply supplied with antique statues, basso-relievos, busts, etc., to which Michael Angelo had free access, and it became his favorite school. He made models first in clay, and afterward in marble.

So great was the talent displayed by the youth, that Lorenzo furnished him with every facility for practice within his power. He sat at his table as his own son, and was introduced to men of rank and genius. The death of Lorenzo, in 1492, deprived him of his protector, and he returned to his father's house.

But ere long, Piero, the son and successor of Lorenzo, though destitute of his taste and talent, renewed the offer to Michael Angelo, and he again became a member of this family. Soon after, he left Florence, and spent a short time in Bologna, where he executed two statues, in marble, for the church of St. Domenico; a St. Petronio, and an angel kneeling, holding a candelabrum. Each of these was three palms (about 26¼ inches) in height. Thence he returned to his father's house, and made a statue of an infant St. John sleeping, and also a sleeping Cupid. This last was purchased by an acquaintance, who having buried it awhile in the earth, dug it up and sold it in Rome as an antique, (then much prized,) for 200 ducats. The deception, however, was discovered, and the money reclaimed. When it was discovered that Michael Angelo was the sculptor, great commendation was bestowed on him, and he was advised to go to Rome. He did so, and there he made a statue of Cupid, now lost, and of Bacchus, which is in the gallery at Florence. He also executed a group of the Virgin and Dead Christ, or "La Pieta," which was very much admired. This now forms the altar-piece in a chapel of St. Peter's. Several copies were made of it.

He also executed a colossal figure of David, made from a block of marble which had been provided for another purpose, but had been spoilt, as it was supposed, for any purpose of sculpture. This, in 1504, was placed in the Piazza, in front of the Palazzo Vecchio, where it now stands. He afterwards executed another statue of David, in bronze, which was sent into France, and a group in bronze, of David vanquishing Goliah; also a statue of St. Matthew, for the cathedral at Florence. Soon after, he returned to Florence, but on the accession of Julius II. was invited back to Rome, and it was proposed by the new pope that he should build a mausoleum. worthy of himself

and his nation. The difficulty of finding a place suited to so grand an affair, led finally to a determination to rebuild St. Peter's, then a very old church, and this is the origin of that edifice, which took one hundred and fifty years to complete, and is now the grandest display of architectural splendor in the world.

The next work of importance in which he was engaged, was in drawing the cartoons for the paintings of the walls of the Sistine Chapel. The following incident is worthy of notice. The architect of St. Peter's was ordered to construct a scaffolding for this work, to be painted in fresco. When the scaffolding was finished, Michael Angelo found it extremely objectionable, particularly from certain holes pierced in the ceiling for cords to pass through to suspend a part of the machinery. He asked the architect how the ceiling could be completed if they were suffered to remain. To which he answered, "It is impossible to avoid making them, and the remedy must be a subsequent consideration." This created a dispute, and Michael Angelo applied to the pope, who gave him permission to take it down and erect another in its stead. He then designed and constructed one so complete, that Bramante afterward adopted it in the building of St. Peter's, and it is most probably that simple and admirable piece of machinery which is now used in Rome whenever there is occasion for scaffolding to repair or construct the interior of public buildings. This invention Michael Angelo gave to the poor man whom he employed as his carpenter, and from the commissions he received for making others of the same construction, he realized a small fortune.

The cartoon of the Last Judgment was completed in 1541. Persons came from the most distant parts of Italy to see it, and the public and the Court were rivals in admiration.

Michael Angelo, though not the first architect of St. Peter's, was appointed to that place on the death of San Gallo, in 1546. He accepted the office against his will, and on the condition that he should receive no salary. He changed essentially the plans that had been made for that splendid structure, and his successors did not vary materially from those which he had prepared. He lived long enough to see the walls erected to the base of the dome. The lantern of that church was modelled from that devised by Brunnelleschi, for the church of St. Maria del Fiore, which we described in a former number.

Further incidents of great interest in the life of this wonderful man, must be reserved for a future opportunity. He died in 1564.

LIST OF STATE FAIRS FOR 1854.

Ohio,	Newark,	September	19—22.
Michigan,	Detroit,	September	26—29.
Illinois,	Springfield,	September	12—15.
Indiana,	Madison,	October	4— 6.
Iowa,	Fairfield,	October	25.
Wisconsin,	Watertown,	October	4— 7.
Pennsylvania,		September	27—29.
New-York,	New-York City,	October	3— 6.
Vermont,	Brattleboro',	September	12—14.
New-Hampshire,		October	3— 6.
Georgia, (So. Central,)	Augusta,	October	23—28.

THE PRINCIPLES OF THIS JOURNAL.

The following were among the principles advocated by our learned predecessor, J. Stuart Skinner, the founder of this journal, as set forth in his prospectus; and this policy has been its leading and favorite topic of discussion to the present day.

"The immediate and ever-increasing tendency of a *national* policy which shall thus encourage American labor, generally, will be to raise up everywhere thriving and prosperous *consumers* of the fruits of the soil, instead of dispersing far and wide those who cultivate the soil, until, in process of time, their lands in the far west shall be exhausted, and themselves ruined in the new States, as their fathers have been in the old, by loss of time and expense of transportation over the bad roads that always belong to sparse populations, leading to distant markets already overstocked. Until we can have such a policy thus widely spread, and thus deeply rooted, not in the ephemeral success of a party, but in the mind and affections of the nation, it will be in vain for the friends of agriculture to go on recounting to farmers, how large crops may be made on small spots of land, and great masses of fat accumulated upon single bullocks. In vain will it be to tell, again and again, how to make the most fragrant butter; how to insure the most perfect fruit; how and when to sow and to reap! In vain will societies go on exciting, at long intervals, a fitful and transient spirit of emulation by the award of silver cups, and paper diplomas, if all the time we fail to encourage, in proximity to the plough, the growth of thriving, industrious, and happy communities, to consume the products of the plough; laboring men and women, in all the other great branches of industry, who, being able, will ever be ready to consume our cotton and sugar, our butter, fruit, corn, meat, vegetables, and all the various productions that the most improved agriculture and horticulture can supply.

It is worse than idle to *talk* about the admitted value of more intelligence for the landholder in the prosecution of his business; what he first needs, for all that his land can be made to produce under the highest improvement of which it is susceptible, is to have *stable and reasonably-remunerating markets near at home*, that he may save for the improvement of his land—*his* great machine of production—his manufactory—the time and the substance which are now wasted on the road and for ever lost, in the act of searching for customers to take his produce at whatever it will bring. Let the demand be created, and the supply of intelligence, as of all other things, will follow as a matter of course. With increase of reward, and with that only, will come discovery and a general increase of knowledge; and with general and well-remunerated increase of intelligence, will come a general improvement of the soil, and with it wealth, population, education, power, civilization, and peace; and hence arises, in our judgment, the duty to show, as far as we are capable, the natural and mutual dependence which everywhere subsists between the Plough, the Loom, and the Anvil—between the farmer who digs his corn and the ironmonger who digs his ore, and the miner who digs his coal out of the ground—to the end that all the industrial employments of our own country, being bound together by one common interest, may each one give its influence to the maintenance of a policy conservative of the common welfare of all. To this end, then, friends and followers of the plough, will be directed the future labors of one, in whose writings, such as they have been for thirty years, in behalf of American agriculture, you have never seen, nor ever will see, a line written for narrow party purposes."

A SPICE ORCHARD.

In one of his letters from the East, Bayard Taylor gives an account of a visit to a nutmeg-orchard on the island of Penang:

"On our return to the ship, we visited a nutmeg plantation. The trees, which are from twenty to thirty feet in height, are planted in rows, at intervals of about 20 feet. The leaf is dark-green and glossy, resembling that of the laurel, and the fruit, at a little distance, might be taken for a small russet-colored apple. When ripe, the thick husks split in the centre, showing a scarlet net-work of mace, enveloping an inner nut, black as ebony, the kernel of which is the nutmeg of commerce. The clove-tree, not now in its bearing season, has some resemblance to the nutmeg, but the leaf is smaller, and the foliage more loose and spreading. As we drove through the orchard, the warm air of noon was heavy with spice. The rich odors exhaled from the trees penetrated the frame with a sensation of languid and voluptuous repose. Perfume became an appetite, and the senses were drugged with an overpowering feeling of luxury. Had I continued to indulge in it, I should ere long have realized the Sybarite's complaint of his crumpled rose-leaf."

THE UNIVERSAL EXHIBITION OF 1855 AT PARIS.

The *Moniteur* publishes at last the general regulations of the Universal Exhibition, which are very liberal. It will commence on the 1st of May and end on the 31st of October, 1855.

Foreign governments are invited to appoint committees, to whom the articles to be exhibited have to be submitted for examination. The French and foreign articles will be received at the Palais de l'Exposition from the 15th of January until the 15th of March, 1855.

The foreign articles will be forwarded and returned at the expense of the state from and to the sea-ports of France, duty free. The prices of articles can be affixed. The articles of each nation are to be exhibited altogether. Inventions and designs are protected from piracy.

Important Railroad Movement.—The adjourned meeting of the committee of the seven railroad companies connecting Boston with the two Canadas and the Lakes, (comprising Lowell, Nashua, Concord, Northern, Vermont, Central, Canada, and Ogdensburg,) was recently held in Boston, and after an harmonious and animated discussion, a committee was appointed, with full power to make arrangements for the purchase of 1000 additional freight-cars, on joint account, for the accommodation of the rapidly-increasing *through* business of the entire line, which it is believed can be doubled by this sensible and business-like arrangement. The movement will be calculated to improve both the intrinsic and market value of the bonds and stock of the Central and Ogdensburg roads, and enable the other five companies to pay larger dividends henceforth.—*Gran. Farmer and Visitor.*

EDITORS' JOTTINGS AND MECHANICAL RECORD.

THE MONUMENT AND THE FUND MOVEMENT.

Our readers are apprized of this effort, as laid before them in the late numbers of our journal. That effort is going forward as rapidly as possible, although there are more difficulties in prosecuting every project of this sort than is dreamed of in the philosophy of any who are inexperienced. Were these difficulties well appreciated, every subscriber in prosperous circumstances who has not yet responded to our call, as some have done, would sit down forthwith and remit us the ten, five, or two dollars, (or even one dollar, as a free donation,) to so great and noble an object. How many hundred of you will profit by this hint?

But we took our pen for the purpose of saying that while we give the biographical sketch, promised in a recent number, of the late John Stuart Skinner, we have found it utterly impracticable to have the PORTRAIT ready for this issue. We have a copy from which it is to be taken, perhaps with some amendments, so as to give a view that shall be quite life-like, and worthy of careful preservation. As soon as these points can be gained, the picture will be issued.

MUSICAL CONGRESS, CRYSTAL PALACE.—The past month has introduced a new feature, and a very delightful one, in this great Exhibition. A Musical Congress has been assembled for several successive evenings, filling those spacious courts with the harmony of music. On the first evening, June 15th, more than 29,000 tickets were sold. The vocal department was about 1800, and the orchestral about 880. Never was a more successful concert given. The great JULLIEN was the chief conductor, and exhibited himself the same genius, competent to any style of performance, that he has been previously acknowledged to be in his own concerts in this and in other cities.

The sacred choruses were grand beyond description, and the lighter ones well performed and duly appreciated. The solos, duets, etc., could be heard by only a few, comparatively, but were in good style. The series is not closed, while we write this hasty notice, (June 17th,) and hence we can not be so minute or so general as we can hereafter. We consider this attempt or experiment as perfectly successful, and hope it may again be repeated in the fall and winter. We shall again refer to this great and successful enterprise.

RUNNING-GEAR FOR WHEEL-CARRIAGES.—The Clinton *Courant* notices a very important improvement in the fashion of running-gear for wheel-carriages. Its advantages are thus set forth:

"Firstly, the wagon to which it is attached can be turned, with perfect comfort to the horse, *within a circle of the diameter of four feet*—a great desideratum with city travellers. Secondly, the horse is brought nearer to his work, and does it with greater ease. Thirdly, it is much less liable to disarrangement, and safer than the ordinary gearing, beside doing away with the rattle and clatter of those now used. Fourthly, getting in and out of the vehicle is rendered much easier and more pleasant, as it can be done without touching a wheel. Fifthly, the springs are so arranged that one or four persons may ride without altering their bearing; and in either case, the motion is more pleasant and regular than that of any other wheel-carriage in which we were ever before seated. To all these advantages is added the fact that there is no appreciable difference in the cost between the new and old arrangement."

FENCING OUT THE CURCULIO.—W. Manice, of Long-Island, constructed many years ago, a tight board fence around his plum-orchard, about nine feet high, with tight board gates. The curculios did not fly high enough to enter, many striking the sides of the fence and falling outside. An acquaintance who visited the garden when in full fruit, informed us that all the trees *within* the inclosure were heavily loaded with plums; at the same time he observed a tree outside that had lost every specimen.

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GIGANTIC BORING-MACHINE.—It is almost within the memory of middle-aged men, when the most of the metal-boring in Scotland was wrought by hand-wrought drills, or by small turning-lathes. The many purposes to which iron is now applied, and the wonderful size to which all parts of machines, especially steam-engines, have grown, have put all such petty and primitive tools out of mind as well as out of sight. A mere boring tool, now-a-days, is a much larger machine than many steam-engines were not long ago; and the one which has led us to make the above remarks is much larger than many steam-engines now in operation. This magnificent tool, which has been made for one of Mr. Robert Napier's engine-shops, in Glasgow, Scotland, weighs no less than 30 tons, and stands 25 feet high. The height of the entablature of the frame is 15 feet, and the width is no less than 14 feet. The frame-work of this grand boring-machine is composed of two upright columns, surmounted by an elegant entablature, below which the wheels, which give power to the boring, are supported on a cross-beam of great size and strength. This tool, which can work at all speeds, from one revolution in two and a half minutes to sixteen revolutions in one minute, is capable of boring a hole in solid iron of ten inches, or a cylinder of ten feet diameter, and can take any feed, from one fortieth to one eighth of an inch per revolution of the spindle; and it is capable of boring a hole seven feet eight inches in length. This tool is to be used for boring and facing malleable iron cranks, cross-heads, connecting-rods, cylinders, air-pumps, etc., for marine-engines.

AN IMMENSE BRIDGE.—A correspondent of the *Chicago Press* thus describes the great bridge at Peru, Ill., on the Illinois Central Railroad:

"The great bridge of the Illinois Central Railroad, 3500 feet, or two thirds of a mile in length, is rapidly approaching completion; the cars, however, will not run over it before October. This, your readers are aware, is the greatest work of the kind in the West, and is one of the seventy-five truss-bridges now under contract by the enterprising firm of Stone & Boomers, of Chicago. It reaches from bluff to bluff, is 75 feet in height, contains upward of 1,000,000 feet of timber, all worked up in Chicago, and how much iron and stone I know not. The mason work is not excelled, and is of the Joliet hydraulic-rock. The top is to be covered with tin and made water-tight; the trains of cars are to run on top of all; beneath them and between the frames pass the roads for wagons, and underneath all, pass the river and canal. An ornamental railing is to be placed each side of the track."

ATTACHING CAR-WHEELS TO AXLES.—T. G. Walker, of West-Farms, N.Y., has taken measures to secure a patent for an improved mode of securing car-wheels to their axles—whereby the wheels may be adjusted upon the axles—moved so as to suit the broad or narrow gauges of the railroads without moving the axles from their boxes. The invention consists in having a screw-thread cut on each end of the axle—a right-hand thread on one end, and a left-hand thread on the opposite end of the axle. The centres of the wheels have circular apertures through them, with reversed threads of screws to those on the ends of the axles. The wheels are secured at the required distance apart by means of screw-keys, which fit in slots in the axle. By unscrewing the keys, the wheels can be readily adjusted to suit different widths of the track, such as where a narrow track locks with a broad gauge, and *vice versa*.

CORN-PLANTERS.—Erastus Holt, of Wheaton, Ill., has made an improvement in corn-planters, which consists in arranging a vertical sliding receptacle under the discharge of the hopper, and providing a receptacle with a vertical plunger or discharger, and operating the whole by the action of the propelling-wheels through a spring and cam. The receptacle is constructed and arranged so as to move with the plunger and serve as a cup for containing the seed, until its upper end arrives at the top of the second chamber of the hopper, when it remains stationary, and allows the plunger to rise separately and force seed out of the same, and discharge them into the drill-tube, to be deposited in the ground. Measures have been taken to secure the patent.

NATURAL PRINTING PROCESS, (Naturselbstdruck.)—Under this term Louis Auer, of the Imperial Printing-office at Vienna, has patented a process invented by himself, in conjunction with Mr. Andrew Worring, overseer of the same establishment, "for creating, by means of the original itself, in a swift and simple manner, plates for printing copies of plants, materials, lace, embroideries, originals or copies, containing the most delicate profundities or elevations not to be detected by the human eye," etc. A pamphlet giving a description of this discovery, and a series of specimens, has reached us. The examples consist of an impression from a fossil-fish, from the agates, the leaves of trees, several plants, mosses, algæ, and the wing of a bat. These are all printed in the natural colors of the objects they represent; and it is difficult to conceive any thing more real than these productions. The general character of the process is told in the following pithy manner by Louis Auer, in the introductory paragraphs of his pamphlet:

"*Query.*—How can, in a few seconds, and almost without cost, a plate for printing be obtained from an original, bearing a striking resemblance to it in every particular, without the aid of an engraver, designer, etc.?

Solution.—If the original be a plant, a flower, or an insect, a texture, or, in short, any lifeless object whatever, it is passed between a copper-plate and a lead-plate, through two rollers that are closely screwed together. The original, by means of the pressure, leaves its image impressed with all its peculiar delicacies—with its whole surface, as it were—on the lead-plate. If the colors are applied to this stamped lead-plate, as in printing a copper-plate, a copy in the most varying colors, bearing a striking resemblance to the original, is obtained by means of *one single* impression of each plate. If a great number of copies are required, which the lead-form, on account of its softness, is not capable of furnishing, it is stereotyped, in case of being printed at a typographical press; or galvanized, in case of being worked at a copper-plate press, as many times as necessary; and the impressions are taken from the stereotyped or galvanized plate instead of from the lead-plate. When a copy of a unique object which can not be subjected to pressure, is to be made, the original must be covered with dissolved gutta percha, which form of gutta percha, when removed from the original, is covered with a solution of silver, to render it available for a matrix for galvanic multiplication."

This process is also applicable to the purpose of obtaining impressions of fossils, or of the structure of an agate or other stone. In all the varieties of agate, the various layers have different degrees of hardness; therefore, if we take a section of an agate, and expose it to the action of fluoric-acid, some parts are corroded, and others not. If ink is at once applied, very beautiful impressions can be at once obtained; but, for printing any number, electrotype copies are obtained. These will have precisely the character of an etched plate, and are printed from in the ordinary manner. The silicious portions of fossil, and the stone in which they are imbedded, may in like manner be acted upon by acid; and from these either stereotyped or electrotyped copies are obtained for printing from. We learn that Mr. Bradbury, of the firm of Bradbury & Evans, has availed himself of this invention, and that he is now preparing a series of botanical specimens for publication; so that, very shortly, the public will be in possession of examples of this beautiful process. It is not a little singular, that the workers in German silver and Britannia metal, at Birmingham, have for some time been in the habit of ornamenting the surfaces of these metals by placing a piece of lace, no matter how delicate, between two plates, and passing these between rollers. In this way every fibre is most faithfully impressed upon the metal. We are not aware, however, that any attempts to print from these impressions have yet been made at Birmingham.

BRILLIANT WHITEWASH.—Many have heard of the brilliant stucco whitewash on the east end of the President's House at Washington. The following is a receipt for making it, with some additional improvements learned by experiment:

Take half a bushel of nice unslaked lime; slake it with boiling water; cover it during the process to keep in the steam. Strain the liquid through a fine sieve or strainer, and add to it a peck of clean salt, previously well dissolved in warm water; three pounds of ground rice, boiling to a thin paste, and stirred in boiling hot; half a pound of powdered Spanish whiting, and a pound of clean glue, which has been previously dissolved by first soaking it well, and then hanging it over a slow fire, in a small kettle, within a large one filled with water. Add five gallons of hot water to the whole mixture, stir it well, and let it stand a few days, covered from the dirt. It should be put on right hot; for this purpose, it

can be kept in a kettle on portable furnace. It is said that about one pint of this mixture will cover a square yard, if properly applied with a brush as in painting. It answers as well as oil-paint for wood, brick, or stone, and is cheaper. It retains it brilliancy for many years. There is nothing of the kind that will compare with it, either for inside or outside walls. Coloring matter may be put in, and made of any shade you like.

Spanish-brown stirred in will make red or pink, more or less, according to the quantity. A delicate tinge of this is very pretty for inside walls. Finely pulverized common clay, well mixed with Spanish-brown before it is stirred into the mixture, makes a lilac color. Lamp-black, in moderate quantities, makes a slate color, very suitable for the inside of buildings. Lamp-black and Spanish-brown, mixed together, produce a reddish stone color. Yellow ochre stirred in, makes yellow-wash, but chrome goes farther, and makes a color generally esteemed prettier. In all these cases the darkness of the shade will of course be determined by the quantity of coloring used. It is difficult to make a rule, because tastes are very different; it would be best to try experiments on a shingle, and let it dry. We have been told that green must not be mixed with lime. The lime destroys the color, and the color has an effect on the white-wash, which makes it crack and peel. If a larger quantity than five gallons is wanted, the same proportions should be observed.

Interesting Presentation.—We are pleased to record that our esteemed old friend, Mrs. Partington, has been presented with a new corn-broom by her grocer, as a mark of esteem for the prompt manner in which she has paid her bills. The presentation was made in the front part of the shop, amid a crowd of orange-baskets and sugar-barrels, and the ceremony was marked by peculiar interest, as was the skirt of Mrs. Partington's bombasine dress with an estray puff of flour. The grocer, handing the broom at arm's-length over the counter, addressed her—his eyes filled with tears, and his mouth with half an orange—as follows: "Take the broom, mem, and with it the assurance of my distinguished consideration." Mrs. Partington took the broom in her fingers, and, with evident emotion, said, at the same time looking at Ike, who was peering wistfully into the orange-basket, "I thank you for the broom, and I shall never fail to forget the doughnut." She meant donor, and Ike said she did say so; but the grocer, who was a gross man, thought differently. The broom, on one side of the handle, bears, on a small, square, yellow piece of paper, the inscription, "Half doz. corn-brooms, made and warranted by the Harvard Society, and for sale by grocers *generally*;" on the other—nothing at all. The gift was a beautiful tribute of groceries to worth, and the story which afterward "got round," that she had paid two York shillings for the broom, and that the presentation was all a sham, was an outrageous libel, that had its origin in the meanest envy.—*Post.*

The Reading Railroad.—This company are relaying a portion of their track with new rails. Some four miles between Reading and Birdsboro' have been laid with a newly-invented English rail which requires no wooden sills, but is placed upon a bed of broken stone, and secured by wrought-iron ties extending across the track at the joints of the rails, say about eight feet apart. The rails are made with very broad flanges at the base, thus spreading upon the ground, and intended to support themselves without the aid of sills. They have been laid as an experiment, and the heavy tonnage of the road will doubtless put them to a fair test. If found to answer, their adoption will save a large item of cost, in the matter of wooden sills.

Tubular Iron Bridge.—The construction of the great tubular iron bridge across the St. Lawrence, opposite Montreal, has commenced. One of the immense coffer-dams, made of timber, in which the piers are to be built, has been launched and towed to its place, and others are in progress. Some 1500 men will, it is said, be employed on the bridge during the summer.

Cashmere Shawls.—To make one of the finest Cashmere shawls requires the work of a family for a lifetime. They sell in Cashmere itself for five thousand dollars.

A NEW QUILTING-FRAME.—The *Michigan Farmer* describes a new quilting-frame, which economizes space, and if it works as well as is claimed for it, it must be practically admired by the ladies. It is compared to a table-frame two and a half feet wide by nine and a half long. Two or three inch scantling placed eight-square, or round, is used for the side-rails. On the ends of these is made a round tenon, one and a half inches in diameter, and one inch longer than the thickness of the end-rails at the shoulder of the rail; on one end of each a small wray-wheel, made of cast-iron, or thick sheet-iron, may be nailed to the end of the tenon. The wheel is about four inches in diameter. A small dog, made of nail-rod, should be attached to the end of the frame, so as to play on the wray-wheel. Along the side-rails a strip or list of cloth is nailed, to which the quilt is stitched. When the quilt is put together, sew one side to the listing of one rail, and roll it on so far that the other side of the quilt may be fastened to the other rail, and the work is ready. As fast as quilted, roll up the wray-wheel and dog, holding all in its place. The frame is light, portable, and takes up but little space compared to the old-fashioned, long-armed contrivances.

WEST-LINCOLN AGRICULTURAL AND HORTICULTURAL SOCIETY.—At the annual meeting of the West-Lincoln Agricultural and Horticultural Society, held at Lewiston, Maine, 8th inst., the following officers were elected:

President—Elijah Barrell, Greene.
Vice-Presidents—Wm. Neal, Lisbon; Daniel Pierce, Poland.
Recording Secretary—Wm. R. Wright, Lewiston.
Corresponding Secretary—Wm. R. Frye, Lewiston.
Treasurer—Mark Lowell, Lewiston.
Agent—E. Ham, Lewiston.
Librarian—Calvin Record, Danville.
Trustees—John M. Frye, Lewiston; Augustus Sprague, Greene; Robert Martin, Danville; Francis F. Purrington, Topsham; J. Strout, Durham.

AMERICAN WIRE.—In many branches of iron-manufacture, our country has advanced with rapid strides, and now maintains a distinguished position. This is especially the case with the manufacture of iron wire. There are some packages of wire on exhibition at the Crystal Palace, which deserve more than a passing glance from every visitor. They were manufactured at the Trenton Iron Works, Trenton, N. J. In quality they are unsurpassed, and in variety they show the perfection of machinery used in their manufacture, and the ductility of the metal employed. There are some specimens, we should judge, about half an inch in diameter, while there are others so fine and beautiful they resemble silver hair. In one package of two pounds there are six thousand yards; and in another package of one pound twelve ounces, there are four thousand yards, or one hundred and forty-three and a half yards in a single ounce of iron.—*Scientific American.*

GREASE FOR CARRIAGE-WHEELS.—This composition prevents friction to a great extent. Its cost is not comparatively greater than the materials often employed for the purpose; it is not changed by heat, and hence does not liquify and flow away from its proper place:

Black lead pulverized,	50	parts by weight.
Hog's lard,	50	" "
White soap,	50	" "
Quicksilver,	5	" "

Amalgamate well the lard and mercury by rubbing them together for a long time in a mortar; then gradually add the black lead, and lastly the soap, mixing the whole as perfectly as possible.

SPEED OF LIGHTNING.—A wheel made to revolve with such velocity as to render its spokes invisible, is seen, when illuminated by a flash of lightning, for a moment, with every spoke distinct, as if at rest. The reason of this is, the flash has come and gone before the wheel had time to make a perceptible advance.

METEORGRAPH.—Prof. Webster, of the Portsmouth, Va., Institute, has invented a nicely-contrived, but simple instrument, which he calls a Meteorgraph, or practical clerk of the weather. It contains a barometer, pluviometer, hydrometer, and anemometer, and writes down or records with accuracy, the various phenomena of the weather, such as the pressure of the atmosphere, temperature, amount of rain and vapor, and the force and direction of the wind. This instrument will prove a valuable assistant to the extensive system of meteorological observations settled upon by the late scientific conference at Brussels.

GENERAL AGENCY.—The publisher of *The Plough, the Loom, and the Anvil*, believing it in his power to be of essential service to the readers of that journal, in the purchase or sale of various articles, and the transaction of various kinds of business, would announce to them that he is ready to execute any such commission which he may receive, including the purchase of books of any description; implements connected with agricultural, manufacturing, or mechanical operations; artificial manures; farm and garden seeds, etc., etc. One of the gentlemen connected with the journal is a proficient in music, and experienced in the selection of piano-fortes, flutes, etc., and will execute orders in that department.

He *will* also act as agent in the purchase and sale of Real Estate.

☞Particular attention to business connected with the Patent-Office.

Letters of inquiry on these matters will be promptly attended to.

COLLECTORS WANTED—In all the States south and west of Ohio and Pennsylvania. Those of experience preferred, and unquestionable references required. Address, post-paid, or in person, at this office.

NEW BOOKS.

FREE LEAVES FROM FANNY'S PORT FOLIO. Second Series. Auburn and Buffalo: Miller, Osborn & Mulligan. London: Sampson Low, Son & Co. 1854. Pp. 400.

"There's another of Miss Fiddlestick's articles! She's getting too conceited, that young woman! Just like all newly-fledged writers, mistakes a few newspaper puffs for the voice of the crowd, and considers herself on the top of the literary ladder. It'll take *me* to take the wind out of her sails; I'll dissect her before I'm a day older, as sure as my name is Ezekiel Broadbrim."—So Fanny makes our drab-coated brother *to soliloquize* about some body. But it can't be about Fanny herself, for the masses will read her, and the editors may say what they please; and the masses are right. They can not have a more amusing book to read half an hour after dinner. It is spicy, though, like spice, it has its peculiar flavor, and that flavor is ever the same; lively, and piquant, whatever else it is or is not. It is very amusing, and as destitute of positive faults as any book of mere amusement in our recollection.

NEW MUSIC, BY HALL & SON.

THE following are among the admirable pieces recently published by this enterprising house:

Les Adieux, a favorite duet from *Lucia di Lammermoor*, by Donizetti, for piano-forte. By Fred. Beyer.

Juliet. Romanza. Written by H. F. Chorley, and composed by Wm. Vincent Wallace. Excellent.

Away with the Past. Ballad. Words by Wm. Truesdell. Composed by Geo. Washbourn Morgan. Very good.

The Angler's Polka. Composed by Wm. Vincent Wallace. Very characteristic.

Œuvres Favoris. By Wilhelm Kuhe. No. 3. *The Jager.* By Spohr. Elegant classical music.

My Home in Old Kentuck. Song and Chorus. Written and composed by Tucky Ho. A pleasant air, dedicated to Uncle Davy, Lexington, Ky.

List of Patents Issued,

FROM MAY 2 TO JUNE 6.

Simeon Coon, of Ithaca, N. Y., for improvement in sewing-machines.

E. L. Norfolk, of Salem, Mass., for improvement in machinery for drawing flax.

Clark Wheeler, of Little Valley, N. Y., for improvement in bee-hives.

Heman Crosby, Jr., of Watertown, Conn., for improvement in sewing-machines.

Christ'r Hodgkins, of Boston, assignor to Nehemiah Hunt, of same place, for improvement in sewing-machines.

Otis Avery, of Homesdale, for improvement in sewing-machines.

G. T. Enoch and Daniel Wissinger, of Springfield, Ohio, for improvement in seed-planters.

Wm J. Casselman, of Vernon, N. Y., for improved hub-borer.

Wm. Damorel, of Brooklyn, N. Y., for improved extension-bit guard-key for door-locks.

Heman H. Dean, of Adrian, Mich., for improved felloe-machine.

Jacob Edson, of Boston, Mass., for improved pump.

Chas. K. Farr, of Hinds county, Miss., for improvement in in cultivators.

Albert Fink, of Baltimore, Md., for improvement in bridges.

Charles R. Fox, of Chicago, Ill., for improved journal-box for saw-mill carriage.

Nelson Gavitt, of Philadelphia, Pa., for improvement in machinery for culling paper.

Platt C. Ingersoll, of Elmira, for improved arrangement of the pestle and mortar.

William Loughridge, of Weverton, Md., for improved method of unloading canal-boats and other vessels.

H. G. Marchant, of Annisquam, Mass., for improved manure and sand-loader.

J. & G. W. Prescott, of Boston, Mass., for machine for reducing wood to slivers.

J. A. Roth and J. Lee, of Philadelphia county, Pa., for improvement in bleaching apparatus.

J. Rogers, of Poultney, Vt., for improved machine for marking out sash.

Wm. S. Reinert, of Spring Garden, Pa., for machine for weighing and printing butter.

A. M. Sprague, of Mobile, Ala., for adjustable flue-bottom for steam-boilers.

A. M. Sprague, of Mobile, Ala., for improvement in pistons for steam-engines.

D. Talcot, of New-York, for improvement in the construction of hatches.

Enoch Woolman, of Damascoville, Ohio, for improved arrangement of friction-roller in inclined-plane hinges.

B. & T. Winans, of Baltimore, Md., for improved locomotive fire-box.

F. Davis, of Keene, N. H., assignor to J. M. Reed, of Swanzey, N. H., for improvement in screw-jacks.

Wm. Barker, of Utica, N. Y., for improved clapboard joint.

O. Roberts, of Belleville, Ill., for improvement in harvester-rakes.

H. Frisbie, of Olmsted, Ohio, for improved bath-machine.

Wm. Stoddard, of Lowell, Mass., for improved rotary shingle-machine.

C. A. Read, of Waterloo, N. Y., for improvement in self-healing smoothing-irons.

W. L. Bass, of Cambridgeport, Mass., for improvement in tables for ships' cabins.

S. A. Skinner, of Brownington, Vt., for improvement in surgical-splints.

I. M. Hopkins, of Pascoag, R. I., for improvement in knitting-machines.

J. Putnam, of Salem, Mass., for improvement in moulding clay-pipe couplings.

T. J. Sloan, of New-York, for improvement in water-indications of steam-boilers.

C. G. Sargeant, of Lowell, Mass., for improvement in machinery for combing wool.

G. Rogers, of Enfield, Eng., for improvement in baths for coating metals with other metals.

Henry Burt, of Newark, N. J., assignor to the "Newark Patent Hosiery Co.," of same place, for improvement in knitting-machines.

A. Greenleaf, of Kingston, Pa., for improved water-wheel.

L. Lackey, of Sutton, Mass., for improvement in machines for pegging boots and shoes.

H. B. Hammon, of Bristolville, Ohio, for improvement in ox-yokes.

D. P. Baldwin, of San Francisco, Cal., for improvement in shower-bath.

L. Dederick, of Albany, N. Y., for improved hay and cotton-presses.

G. B. Higgins, of Syracuse, N. Y., for improved fastening for ear-rings.

F. Baker, of Pepperell, Mass., for improved lathe for irregular forms.

B. Hughes, of Rochester, N.Y., for improvement in trip-hammers.

C. M. Daboll, of New-London, Conn., assignor to himself and A. P. Daboll, of same place, for improved catch for holding the bit in brace-stocks.

W. Eaton, of Carbondale, Pa., for improvement in machines for cutting glaziers' points.

C. H. Dana, of West-Lebanon, N. H., for improvement in potato-diggers.

J. Hultz, of Berlin township, O., for improvement in gun-locks.

N. W. Cilley, of Nottingham township, N. Y., for improved method of hanging gates, etc.

Wm. H. Mitchell, of Brooklyn, N.Y., for improvement in machinery for composing type.

J. Peck, of New-Haven, Conn., for improvement in fire-arms.

L. Scott, of St. Louis, Mo., for improved portable grinding-mill.

I. Stewart, of Washington, D. C., for improved saw.

H. H. Taylor, of Springfield, Mass., for improved machine for paging books.

Wm. H. Towers, of Philadelphia, Pa., for improvement in guitars.

Wm. H. Street, of New-York, for improved mode of attaching blankets to cylinders for printing-presses.

M. Spear, of Baltimore, Md., for improvement in mitre-box.

I. W. Little, of Newbury, Mass., for improvement in ox-yokes.

P. S. Howes, of Boston, Mass., for improvement in self-heating smoothing-irons.

B. M. Smith, of Springfield, Vt., for improved bathe-bag.

P. B. Tyler, of Springfield, Mass., for improved mode of nibbling saw-teeth.

J. Edmondson, of Salford, England, and C. Haworth, of Marsden, England, executors of Thos. Edmondson, deceased, late of Salford, aforesaid, for improved case for holding railway and other tickets.

L. W. Leeis and R. M. Smith, of Philadelphia, Pa., for improvement in pydraubic heaters.

E. Brown, of Waterbury, Conn., assignor to the "Scoville Manufacturing Co.," of same place, for improvements in machine for making hinges.

E. H. Graham, now or late of Biddeford, Me., assignor to himself and A. Wheeler, of Lowell, Mass., for improvement in magazine-guns.

J. Burch, of Cragg Hall, near Macclesfield, Eng., for improvement in constructing ships for safety and escape.

Peter Teal and Chas. Tyler, of Philadelphia, assignors to W. P. Cresson and R. Patterson, of same place, for improvement in lathes for turning the interior surface of hollow-ware. Patented in England, April 9, 1853.

J. Edmondson, of Salford, Eng., and C. Haworth, of Marsden, Eng., executors of T. Edmondson, deceased, late of Salford, aforesaid, for improved machine for printing railway and other tickets. Patented in England, March 19, 1854.

R. A. Lee, Roxbury, for improvement in pianoforte action.

G. B. Turner, of Cuyahoga Falls, for improved sunt-machine.

A. N. Newton, of Richmond, Ind., for improved primer for fire-arms.

L. A. Miles, of Hopkinsville, Ohio, for improved pump-valve.

R. P. Adams, of Clinton, Ill., for improved excavator for fence-posts.

H. T. Anthony and F. Phœbus, of New-York, for improved apparatus for the manufacture of daguerreotype discs, etc.

I. Babbitt, of Roxbury, for improvement in hones. Patented in England, March 30, 1854.

Hiram Baldwin, of Nashua, for improvement in ratchet-lever.

J. Beach, of De Ruyter, for improvement in cheese-hoops.

A. T. Clark, of Lancaster, for improved mode of balancing window-sashes.

H. A. Chase, of Boston, Mass., for improvement in counterpoise to cast locomotive-wheels.

J. Curtis, of Chicago, Ill., for improved wind-mill.

E. Davis, of Chicago, Ill., for improved self-acting power-press.

L. Danforth, of Buffalo, N. Y., for improved machine for making book-covers.

J. P. Hayes, of Philadelphia, Pa., for improvement in hot-air furnaces.

A. Jacobs, of Ithaca, N. Y., for improved apparatus for regulating the supply of feed-water to steam-boilers.

J. McMullen, of Baltimore, Md., for improved mechanical means for preventing incrustation in steam-boilers.

J. Myers and R. G. Eunson, of New-York, for improved machine for sawing thin boards, etc.

J. Pigot, of Brooklyn, N. Y., for improvement in apparatus for making palliasses.

T. S. Steadman, of Murray, N. Y., for improvement in clover-harvesters.

L. C. Suggett, of Lexington, Ky., for improvement in processes for treating hemp.

J. C. Strode, of West-Chester, Pa., for improved hydraulic-ram.

R. L. Wright, of Blue Rock, Pa., for improvement in tire-bending machines.

R. & T. Winans, of Baltimore, Md., for improvement in locomotive-tenders. Ante-dated May 9, 1854.

T. W. Brown, of Boston, Mass., assignor to Wm. W. Mead, of same place, for improvement in button-hole cutters.

J. Mansure, of Philadelphia, Pa., assignor to Parr & Thompson, of Philadelphia county, Pa., for improved bracelet-clasp.

Isaac M. Singer, of New-York, for improvement in sewing-machines.

Christian B. Miller, of Wilmington, Del., for improvement in processes for galvanizing metals.

John Murphy, of New-York, for improvement in the process of treating gutta percha.

Charles T. Appleton, of Roxbury, Mass., for improvement in dyeing processes. Patented in England, Aug. 30, 1853.

Wm. Beal, of Lowell, Mass., for improvement in corn-crushers.

J. H. Barsanter, of Philadelphia, Pa., for improvement in knitting-machines.

Charles H. Bigelow, of Lawrence, Mass., for improved mode of manufacturing turbine wheels.

John Brown, of New-York, for improvement in hot-water apparatus.

Abel Brearer, of Sangatuck, Conn., for improvement in fastening the discs and rims of car-wheels.

J. H. Farchild, of Jericho, Vt., for improvement in hooks and eyes.

Charles Gregg, of Brooklyn, N. Y., for improvement in vices or chucks for holding cylindrical bodies.

J. Harraday, of New-York, for improved machine for cutting out cloth. Patented in England, Jan. 28, 1854.

Silas A. Holmes, of Brooklyn, N. Y., for improvement in cameras for taking stereoscope or other daguerreotypes.

Carmi Hobson, of Hannibal, Mo., for improved stove-machine.

Thomas J. Jarrett, of Horsham, Pa., for improvement in hay-elevators.

Geo. Neilson, of Boston, Mass., for improvement in ventilating-window for railroad car.

J. R. Pierce, of Castile, N. Y., for improvement in neck-yokes.

D. Pool, of Mt. Carmel, Ill., for improvement in quartz-crushers.

E. M. Ray, of Providence, R. I., for improvement in knitting-machines.

M. W. Stevens and E. G. Kinsley, of Stoughton, Mass., for improvement in sewing-machines.

Robert S. Thomas, of Wilmington, N. C., for improved typography.

Benj. C. Vandusen, of Cincinnati, O., assignor to John Martin and Benj. C. Vandusen, for improvement in furnace grate-bars.

Wm. Wesley, of New-London, Conn., assignor to Jonathan Whipple, Jr., of Hopedale, Conn., for improvement in self-acting nipper-blocks.

Brown S. Wood, of Burlville, R. I., for improvement in knitting-machines.

Robt. Waddell, of England, for improvement in balancing slide-valves of steam-engines. Patented in England, April 27, 1853.

A. H. Rautch, of Bethlehem, Pa., for improvement in machines for washing bottles.

Chas. F. Brown, of Warren, R. I., for improvement in instruments for taking deep sea-soundings.

Jos. de Palm, of New-York, for improvement in brick pottery-kilns. Patented in England, July 18, 1852; in France, August 13, 1852; in Holland and Belgium, Sept. 15, 1852.

Henry R. Campbell, of Lebanon, N. H., for improvement in the combination of a railroad track and wheels.

Samuel McCormick, of Dublin, Ireland, for improvement in pressing the thread upon screw-blanks. Patented in England, March 22, 1853.

Donald Taylor, of East-Boston, Mass., for berth-kneel former.

Henry Allen, of Norwich, Conn., for improved machine for dressing polygonal timber.

Wm. Ballard, of New-York, for improvement in bent timbers for ship-frames.

Whitman Price, of Goldsborough, N. C., for improvement in cultivators.

Jared Pratt, of Taunton, Mass., for improvement in making seamless metal-tubes.

Wm. W. Hill, of Greenport, N. Y., for arrangement of dampers in rotary-stoves.

Walter Westrup, of Wapping, England, for improvement in grain-mills. Patented in England, Jan. 22, 1850.

Mathias P. Coons, of Brooklyn, N. Y., for improved rivet-clamp for wire-fences.

W. A. Flanders, of Sharon, Vt., for moth-killer.

Ross Dugan, of New-York, for improved machine for cleaning and watering streets.

Edward and James M. Clark, of Lancaster, Pa., for improvement in flouring-mills.

Smith Beers, of Naugatuck Conn., for improved method of turning hubs, etc.

Timothy F. Taft, of Worcester, Mass., for improved device for operating cutter-heads of planing machines.

Edward P. Day, of New-York, for improvement in machines to print subscribers' names, etc., on newspapers.

Alfred Brady, of New-York, for improvement in vault-covers.

Noah W. Speers, of Cincinnati, O., for improved hydrant-cap.

Jas. A. Whipple, of Boston, Mass., for improved mechanism for operating pumps.

Samuel H. Dudley, of Milton, Conn., for improvement in road-scrapers.

Francis M. English, of Hopkinsville, Ky., for improvement in whiffletrees.

Robt. M. Wade, of Wadesville, Va., for improved lubricator.

Alex. B. Latta, of Cincinnati, O., for improvement in steam-generators.

Chas. F. Martine, of Boston, Mass., for improvement in sofa-bedsteads.

Hymen L. Lipman, of Philadelphia, Pa., for improved eyelet-machine.

Elijah Phelps, of Hendersonville, Ill., for improvement in excavators.

Wm. B. Johnson, of Staunton, Va., for improvement in seed-planters.

Patrick Clark, of Rahway, N. Y., for improved water-level indicator for steam-boilers.

Thomas and Samuel Champion, of Washington, D. C., for improvement in feathering paddle-wheels.

Waitman Davis, of (near) Morgantown, Va., for improvement in seed-planters.

John Sheffield, of Pultneyville, N. Y., for improvement in apparatus for filing mill-saws.

Robt. H. Collyer, of New-York, for improvement in gold-amalgamators.

Isaac R. Shank, of Buffalo, Va., for improved lath-machine.

David Russell, of Drewersburgh, Ind., for improved method of operating saw-mill blocks.

Harrison C. Clark, of Worcester, Mass., for improved lathe.

Thomas Crossley, of Boston, Mass., for improvement in weaving cut-pile fabrics.

Wm. Cann, of Black-Rock, N. Y., for cleaning bolts of flouring-mills.

Edward Harrison, of New-Haven, Conn., for improvement in grinding-mills.

Jerdon L. Mott, of New-York, for improvement in securing car-wheels upon axles.

Edwin J. Green, of Cedarville, for improvement in joint-bodied buggies.

Levi Dederick, of Albany, N. Y., for improvement in hay-presses.

James J. Johnson, of Allegheny, Pa., and James V. Cunningham, of Pittsburgh, Pa., for improvement in moulding hollow-ware.

John C. Reed, of Mount-Vernon, O., assignor to C. P. Buckingham and Henry P. Upton, of same place, for improvement in grinding-mills.

Hervey Ely, of Rochester, N. Y., assignor to Samuel B. Ely, of same place, for improvement in drying flour.

Thomas Wallace and Henry Baehreister, (the latter now deceased,) of Philadelphia, Pa., for improved blowing-fan.

Dennis Donnovan, for himself and as administrator of Witchell G. Hallman, deceased, now, and late of Philadelphia, Pa., assignor to H. J. White, of Philadelphia, Pa., for improvement in cooking-ranges.

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No. 2 August, 1854. Vol. 7.

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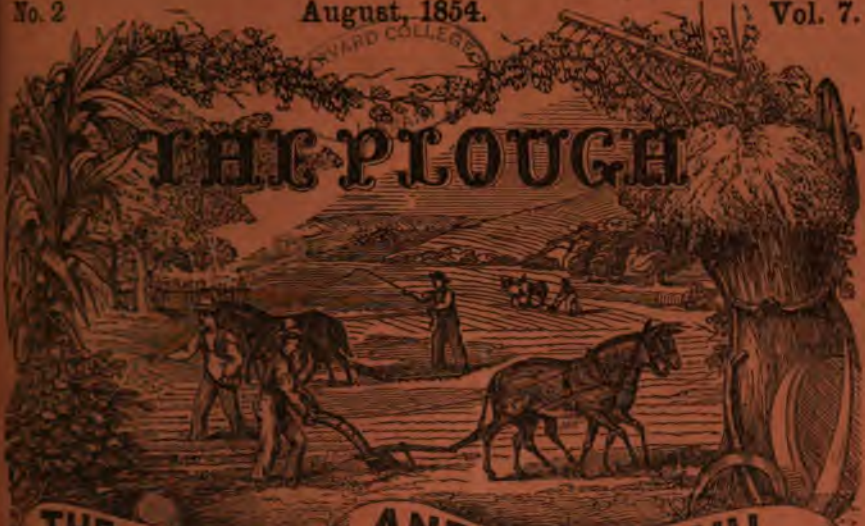
THE PLOUGH



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New-York State Agricultural Society,
State Agricultural Rooms, Albany, Feb. 20, 1850.

At the Show of the Society, held at Buffalo, in September last, a *Cattle-weighing Machine* was erected by Messrs. T. & E. Fairbanks & Co., of St. Johnsbury, Vt. The Scales of Messrs. Fairbanks were selected as most likely to give satisfaction to the exhibitors of fat cattle. The Judges appointed on miscellaneous articles awarded the first premium of the Society for the machine which was erected by them,—and the Judges on fat cattle, who superintended the weighing of all cattle exhibited, expressed their approbation of the great accuracy of the machine.

BENJ. P. JOHNSON, Cor. Secretary.

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The Plough, the Loom, and the Anvil.

VOL. VII. AUGUST, 1854. No. 2.

THE PACIFIC RAILROAD.

COL. FREMONT'S NARRATIVE OF THE EXPLORATION OF THE CENTRAL ROUTE.

AMONG all improvements projected in this country, this is the most important, whether viewed in connection with its effects at either terminus of the road, or at sundry intermediate stations.

Nor can the people of this country afford to neglect works of improvement that are calculated to facilitate intercourse between its widely-separated territories. A unity that is merely nominal, or even political only, is comparatively of little value. The business and the social sympathies of the different parts must be bound together, else it is, practically, little else than a combination of different people and States, the value of which will be among the practical questions that are worthy of exact computation, and can be determined by the summing up of columns of figures representing dollars and cents.

If there is a territory anywhere within reach of such a road, where the people are indifferent to the blessings secured by the Union, let that territory be marked as one through which the Pacific railroad must run at any reasonable cost. There is quite enough of a feeling of "independence" in every section of our country. There is nothing easier, nothing more natural to an American than the conviction—honest to *some extent*—that, come what will, "he can take care of himself;" and so he can, in a certain sense. He can "defend himself" when attacked, courageously and enthusiastically, but he is not omnipotent after all. He can live under great embarrassments, but he can not always remove them. He can bear to be deprived of many things deemed very important, but he can not secure the continuance of them when the fountain is dried up from which they flowed.

An innocent man, or even a guilty one, may prove a match for a posse of civil officers who come to arrest him on a criminal charge, or he may argue most eloquently and ingeniously on his trial before the court; and if convicted, he may oppose (though vainly) every attempt to inflict the penalty, and acquire more laurels of this sort than could a Genghis Kahn or the renowned Tartar of old, and he can comfort himself, for a while at least, when under lock and key, with the reflection that he has won great renown by his prowess; but he is a prisoner after all, and he can neither eat nor drink but at the will of his keepers.

He who undervalues, *not* the glory, *not* the world-wide *renown*, secured by our Union, but the domestic comfort and the sense of individual security thus guaranteed to him, knows not what he is doing.

It is under such an aspect that we regard this project as of so great importance; and we trust our readers will peruse with no little interest the

report which follows, prepared by Col. Fremont. We give it entire, with the exception of two or three paragraphs, not essentially connected with the question which is chiefly concerned, namely, the best route to the Pacific:

The country examined was, for about three-fourths of the distance—from the Missouri frontier, at the mouth of the Kansas river, to the Valley of Parowan, at the foot of the Wahsatch Mountains within the rim of the Great Basin, at its south-eastern bend—along and between the thirty-eighth and thirty-ninth parallels of latitude; and the whole line divides itself naturally into three sections, which may be conveniently followed in description.

The first or eastern section consists of the great prairie slope, spreading from the base of the Sierra Blanca to the Missouri frontier, about 700 miles; the second, or middle section, comprehends the various Rocky Mountain ranges, and interlying valleys, between the termination of the great plains at the foot of the Sierra Blanca, and the Great Basin, at the Parowan Valley and Wahsatch Mountains, where the first Mormon settlement is found, about 450 miles; the third or western section comprehends the mountainous plateau lying between the Wahsatch Mountains and the Sierra Nevada, a distance of about 400 miles.

The country examined was upon a very direct line, the travelled route being about 1550 miles over an air-line distance of about 1300 miles.

The First Section.—Four separate expeditions across this section, made before the present one, and which carried me over various lines at different seasons of the year, enable me to speak of it with the confidence of intimate knowledge. It is a plain of easy inclination, sweeping directly up to the foot of the mountains, which dominate it as the highlands do the ocean. Its character is open prairie, over which summer travelling is made in every direction.

For a railway, or a winter travelling road, the route would be, in consideration of wood, coal, building-stone, water, and fertile land, about two hundred miles up the immediate valley of the Kansas, (which might be made one rich continuous corn-field,) and afterward along the immediate valley of the Upper Arkansas, of which about two hundred miles, as you approach the mountains, is continuously well adapted to settlements as well as roads. Numerous well-watered and fertile valleys—broad and level—open up among the mountains, which present themselves in detached blocks—out-liers—gradually closing in around the heads of the streams, but leaving open approaches to the central ridges. The whole of the inter-mountain region is abundant in grasses, wood, coal, and fertile soil. The Pueblos above Bent's Fort prove it to be well adapted to the grains and vegetables common to the latitude, including Indian corn, which ripens well, and to the support of healthy stock, which increases well, and takes care of itself summer and winter.

The climate is mild and the winters short, the autumn usually having its full length of bright open weather, without snow, which in winter falls rarely and passes off quickly. In this belt of country lying along the mountains, the snow falls earlier and much more thinly than in the open plains to the eastward; the storms congregate about the high mountains, and leave the valleys free. In the beginning of December we found yet no snow on the Huerfano river, and were informed by an old resident, then engaged in establishing a farm at the mouth of this stream, that snow seldom or never fell there, and that cattle were left in the range all the winter through.

This character of country continued to the foot of the dividing crest, and to this point our journey resulted in showing a very easy grade for a road, over a country unobstructed either by snow or other impediments, and having all the elements necessary to the prosperity of an agricultural population.

in fertility of soil, abundance of food for stock, wood and coal for fuel, and timber for necessary constructions.

Our examinations around the southern head-waters of the Arkansas have made us acquainted with many passes, grouped together in a small space of country, conducting by short and practicable valleys from the waters of the Arkansas, just described, to the valleys of the Del Norte and East Colorado.

The Sierra Blanca, through which these passes lie, is high and rugged, presenting a very broken appearance, but rises abruptly from the open country on either side narrowed at the points through which the passes are cut, leaving them only six or eight miles in length from valley to valley, and entirely unobstructed by outlying ranges or broken country. To the best of these passes the ascent is, along the open valley of water-courses, uniform and very gradual in ascent. Standing immediately at the mouth of the Sand Hill Pass—one of the most practicable in the Sierra Blanca, and above those usually travelled—at one of the remotest head-springs of the Huerfano river, the eye of the traveller follows down without obstruction or abrupt descent along the gradual slope of the valley to the great plains which reach the Missouri.

The straight river and the open valley form, with the plains beyond, one great slope, without a hill to break the line of sight or obstruct the course of the road. On either side of this line, hills slope easily to the river, with lines of timber and yellow autumnal grass, and the water that flows smoothly between is not interrupted in its course to the ocean. The surrounding country is wooded with pines and covered with luxuriant grasses, up to the very crags of the central summits. On the 8th of December we found this whole country free of snow, and Daguerre views taken at the time show the grass entirely uncovered in the passes.

Two tunnel-like passes pierce the mountains here, almost in juxtaposition connecting the plain country on either side by short passages five to eight miles long. The mountains which they perforate constitute the only obstruction, and are the only break in the plain or valley line of road from the frontier of Missouri to the summit hills of the Rocky Mountains, a distance of about eight hundred and fifty miles, or more than half way to the San Joaquin valley.

At this place the line entered the middle section, and continued its western course over an open valley country, admirably adapted for settlement, across the San Luis valley, and up the flat bottom-lands of the Sah-watch to the heights of the central ridge of the Rocky Mountains. Across these wooded heights—wooded and grass-covered up to and over their rounded summits—to the Coo-cha-to-ye pass, the line followed an open easy wagon way, such as is usual to a rolling country. On the high summit lands were forests of coniferous trees, and the snow in the pass was four inches deep. This was on the 14th of December. A day earlier our horses' feet would not have touched snow in the crossing.

But the winter had now set in over all the mountain regions, and the country was so constantly enveloped and hidden with clouds which rested upon it, and the air so darkened by falling snow, that exploring became difficult and dangerous, precisely where we felt most interested in making a thorough examination. We were moving in fogs and clouds through a region wholly unknown to us, and without guides; and were, therefore, obliged to content ourselves with the examination of a single line, and the ascertainment of the winter condition of the country over which it passed, which was, in fact, the main object of our expedition.

Our progress in this mountainous region was necessarily slow, and during ten days, which it occupied us to pass through about one hundred miles of the mountainous country bordering the eastern side of the Upper Colorado valley, the greatest depth of the snow was, among the pines and aspens on the ridges, about two and a half feet, and in the valleys about six inches. The atmosphere is too cold and dry for much snow, and the valleys, protected by the mountains, are comparatively free from it, and warm. We here found villages of Utah Indians in their wintering ground, in little valleys along the foot of the higher mountains, and bordering the more open country of the Colorado valley. Snow was here (December 25) only a few inches deep—the grass generally appearing above it, and there being none under the trees or on the southern hill sides.

The horses of the Utahs were living on the range, and notwithstanding that they were used in hunting, were in excellent condition. One which we had occasion to kill for food had on it about two inches of fat, being in as good order as any buffalo we had killed in November on the eastern plains. Over this valley country—about one hundred and fifty miles across—the Indians informed us that snow falls only a few inches in depth, such as we saw it at the time. The immediate valley of the Upper Colorado, for about one hundred miles in breadth, and from the 7th to the 22d of January, was entirely bare of snow, and the weather resembled that of autumn in this country.

The line here entered the body of mountains known as the Wah-satch and An-ter-ria ranges, which are practical at several places in this part of their course; but the falling snow and destitute condition of my party again interfered to impede examinations. They lie between the Colorado valley and the Great Basin, and at their western base are established the Mormon settlements of Parowan and Cedar City. They are what are called fertile valleys, offering inducements to settlement and facilities for making a road. These mountains are a great store-house of materials—timber, iron, coal—which would be of indispensable use in the construction and maintenance of the road, and are solid foundations to build up the future prosperity of the rapidly-increasing Utah State.

Salt is abundant on the eastern border mountains, as the Sierra de Sal, being named from it. In the ranges lying behind the Mormon settlements, among the mountains through which the line passes, are accumulated a great wealth of iron and coal, and extensive forests of heavy timber. These forests are the largest I am acquainted with in the Rocky Mountains, being in some places twenty miles in depth of continuous forest; the general growth lofty and large, frequently over three feet in diameter, and sometimes reaching five feet, the red spruce and yellow pine predominating. At the actual southern extremity of the Mormon settlements, consisting of the two inclosed towns of Parowan and Cedar City, near to which our line passed, a coal-mine has been opened for about eighty yards, and iron-works already established. Iron here occurs in extraordinary masses, in some parts accumulated into mountains, which comb out in crests of solid iron, thirty feet thick and a hundred yards long.

In passing through this bed of mountains, about fourteen days had been occupied—from January 24 to February 7—the deepest snow we here encountered being about up to the saddle skirts, or four feet; this occurring only in occasional drifts in the passes on northern exposures, and in the small mountain flats hemmed in by woods and hills. In the valley it was sometimes a few inches deep, and as often none at all. On our arrival at the Mormon

settlements, February 8th, we found it a few inches deep, and were there informed that the winter had been unusually long-continued and severe, the thermometer having been as low as seventeen degrees below zero, and more snow having fallen than in all the previous winters together since the establishment of this colony.

At this season their farmers had usually been occupied with their ploughs, preparing the land for grain.

At this point, the line of exploration entered the third or western section, comprehending the mountainous *plateau* between the Wah-satch mountains and the Sierra Nevada of California. Two routes here suggested themselves to me for examination—one directly across the *plateau* between the 37th and 38th parallels; the other keeping to the south of the mountains, and following for about two hundred miles down the valley of the Rio Virgen—Virgin river—thence direct to the Trejon Pass, at the head of the San Joaquin valley.

This route down the Virgin river had been examined the year before, with a view to settlement this summer by a Mormon exploring party, under the command of Major Steele, of Parowan, who (and others of the party) informed me that they found fertile valleys inhabited by Indians who cultivated corn and melons, and the rich ground in many places matted over with grape-vines. The Trejon Passes are two, one of them, from the abundance of vines at its lower end, called Caxon de las Uvas. They were of long use, and were examined by me, and their practicability ascertained in my expedition of 1848-'49; and in 1851 I again passed through them both, bringing three thousand head of cattle through one of them.

Knowing the practicability of these passes, and confiding in the report of Major Steele as to the intermediate country, I determined to take the other, (between the 37th and 38th parallels,) it recommending itself to me as being more direct toward San Francisco, and preferable, on that account, for a road, if suitable ground could be found; and also as being unknown, the Mormons informing me that various attempts had been made to explore it, and all failed for want of water. Although biased in favor of the Virgin river route, I determined to examine this one in the interest of geography, and accordingly set out for this purpose from the settlement about the 20th of February, travelling directly westward from Cedar City, (eighteen miles west of Parowan.) We found the country a high table-land, bristling with mountains, often in short isolated blocks, and sometimes accumulated into considerable ranges, with numerous open and low passes.

We are thus always in a valley, and always surrounded by mountains more or less closely, which apparently altered in shape and position as we advanced. The valleys are dry and naked, without water or wood; but the mountains are generally covered with grass and well wooded with pines; springs are very rare, and occasional small streams are at remote distances. Not a human being was encountered between the Santa Clara road, near the Mormon settlements, and the Sierra Nevada, over a distance of more than three hundred miles. The solitary character of this uninhabited region—the naked valleys without water-courses, among mountains with fertile soil and grass, and woods abundant, give it the appearance of an unfinished country.

Commencing at the 38th, we struck the Sierra Nevada on or about the 37th parallel, about the 15th of March.

On our route across we had for the greater part of the time pleasant and rather warm weather; the valley grounds and low ridges uncovered, but snow over the upper parts of the higher mountains. Between the 20th of

February and 19th of March we had several snow-storms, sometimes accompanied with hail and heavy thunder; but the snow remained on the valley grounds only a few hours after the storm was over. It forms not the least impediment at any time of the winter. I was prepared to find the Sierra here broad, rugged, and blocked up with snow, and was not disappointed in my expectation. The first range we attempted to cross carried us to an elevation of 8000 or 9000 feet, and into impassable snow, which was further increased on the 16th by a considerable fall.

There was no object in forcing a passage, and I accordingly turned at once some sixty or eighty miles to the southward, making a wide sweep to strike the point of the California mountain where the Sierra Nevada suddenly breaks off and declines into a lower country. Information obtained years before from the Indians led me to believe that the low mountains were broken into many passes, and at all events I had the certainty of an easy passage through either of Walker's passes.

When the point was reached, I found the Indian information fully verified; the mountain suddenly terminated and broke down into lower grounds barely above the level of the country, and making numerous openings into the valley of San Joaquin. I entered into the first which offered, (taking no time to search, as we were entirely out of provisions and living upon horses,) which led us by an open and almost level hollow thirteen miles long to an upland not steep enough to be called a hill, over into the valley of a small affluent to Kern river; the hollow and the valley making together a way where a wagon would not find any obstruction for forty miles.

The country around the passes in which the Sierra Nevada here terminates declines considerably below its more northern elevation. There was no snow to be seen at all on its eastern face, and none in the pass; but we were in the midst of opening spring, flowers blooming in fields on both sides of the Sierra.

Between the point of the mountains and the head of the valley at the Trejon the passes generally are free from snow throughout the year, and the descent from them to the ocean is distributed over a long slope of more than two hundred miles. The low dry country and the long slope, in contradistinction to the high country and short sudden descent and heavy snows of the passes behind the bay of San Francisco, are among the considerations which suggest themselves in favor of the route by the head of the San Joaquin.

RESULTS OF AMERICAN INDUSTRY.

If any one wishes to see the vast good which comes, directly or indirectly, from the encouragement of the various arts and manufactures, let him visit the great State of Pennsylvania. The villages and cities, even, that have grown up under such an influence, are scattered over the length and breadth of that rich and growing commonwealth. We have presented, at some length, a view of the iron and coal of that region, and the immense wealth created by the manufacture and sale of these minerals.

The largest and richest beds of limestone also are found here. The view here given represents the lime-kilns near Spring Hill. They occur above Morristown, where the hills of the Mine Ridge, somewhat depressed, rise out of and cut off the basin. They are met alternately "in subordinate ridges and valleys of denudation." At various points along the Schuylkill, especially near Spring Hill, Conshokocken, and Port Kennedy, there are very

extensive quarries, where kilns have been erected for burning the stone. They are generally placed on the side of a hill, thereby furnishing peculiar

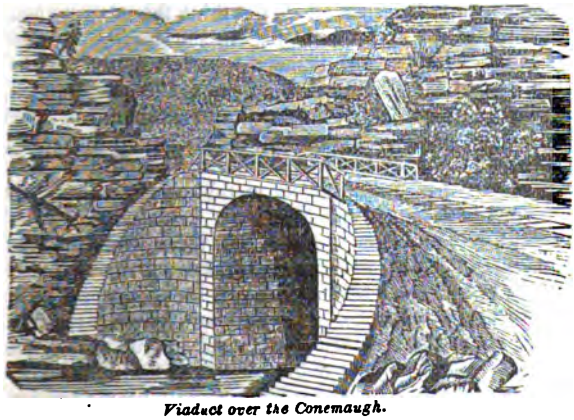
Lime Kilns near Spring Hill.

facilities for throwing in the lime at the top. The stones, as placed in the kiln, form an arch over the hearth, with sufficient space between alternate layers to permit the heat to penetrate and decompose them.

Anthracite Furnaces.

Spring Hill receives its name from a superb boiling spring. A short distance above Manayunk, is one of the most extensive anthracite furnaces in the State. It is on the east bank of the Schuylkill, and presents a spirited scene when viewed from the READING RAILROAD, especially in the evening, when the flames issuing from the chimneys illumine the whole neighborhood.

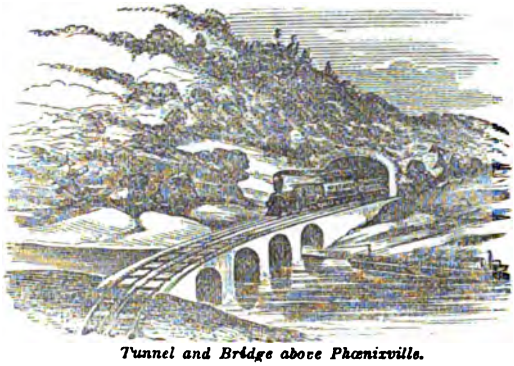
The Reading railroad abounds, along its entire length, with views full of interest. The works of the road itself are peculiarly imposing, while the natural scenery of the territory through which it passes is exceedingly various, and much of it very beautiful.



Viaduct over the Conemaugh.

We also present a view of one of the structures upon the Philadelphia and ColumbiaRailroad, namely, the Viaduct over the Conemaugh. It consists of a single arch of eighty feet, and nearly seventy-five feet above the water of the stream. The engraving also represents the nature of the rocky ridge around which the stream is forced to wind its bed. The little stream is driven nearly a

mile out of its course. The view here given is the western side of the ridge. Of this viaduct Mr. Smith says: "While it can scarcely be surpassed in the neatness and symmetrical proportions of the design, it is as durable as the eternal foundation upon which it rests."



Tunnel and Bridge above Phœnixville.

On the Reading Railroad, a short distance above Phœnixville, is a tunnel more than 2000 feet in length. It is cut through solid dark-red sandstone, and is probably one of the heaviest sections of railroading in the United States. Emerging from the tunnel, the road crosses a splendid and substantial stone arched bridge over the Schuylkill.

PACIFIC RAILROAD: MR. CHATFIELD.

This important subject has been discussed in the meetings of the American Geographical and Statistical Society of this city, and on a recent occasion the Society was addressed by Levi S. Chatfield. The following is an outline of his remarks:

"The history of this project is characteristic of our people and country. It was spoken of as early as 1836 by several statesmen. The only question now is one of finance and route, for it certainly will be constructed. The things to be considered are, Where shall it be? what its length and what the character of the country it goes through? I speak to-night of the Texas route, with reference to all these particulars. Colonel Benton has spoken of its being constructed and worked by the United States government free; the terminus to be in St. Louis. This is not probable. Mr. Whitney has directed public attention to the propriety of the United States government making grants of land to companies or individuals. I do not think this plan the best, because the completion would be delayed. I believe the shortest and least expensive plan is one suggested by myself, namely, to construct the road by a legal corporation, to be aided as far as possible by the general government, to be adopted by the States through which the road runs, and aided by them as far as they choose. I suppose the balance of money would be realized by assessments on the stock, and by loans based on the available means of the company. This scheme I presented to many members of Congress, who recommended me to get a bill for it in the New-York Legislature. This I succeeded in having done after some opposition. The stock was subscribed to the amount of $100,000,000. I do not say it was taken by the best possible names. Steps were taken to have the scheme put in operation. Commissioners were appointed to go to Texas—I among them, where I remained two months. I travelled along the proposed line of road for 300 miles. The general law of Texas nearly confines it to the 32d degree of latitude. There are several other charters granted by Texas for various routes, but they have not been acted on by that State, which shows that her capital is not equal to

the work. Texas has passed a law that whatever company undertakes the 33d degree road shall have 20 sections to the mile; that is, 1280 acres. I regard this as the most magnificent bonus ever offered any company. The 800 miles give 10,240,000 acres, worth $5 per acre, within the time the company is bound to dispose of it; that is, $51,000,000. Several competent judges have pronounced this country the first on the face of the globe, especially the north-eastern counties of Texas, through which one half of the road would pass. I estimate the cost at $32,000,000; good judges say only half that; but the country is a rolling country, through which the cost of grading would be considerable. West of the Trinity River the land is mostly prairie; but east of it is most productive; the staples would be wheat and cotton. I think two bales to the acre could be raised. I am satisfied Governor Stephens's Northern Route is not nearly as productive. From El Paso to Adair Bay the route through Mexico is practicable; the rest of the way to San Francisco is doubtful, but I believe it will be found practicable. But if the road ceased at Adair Bay all the purposes of commerce would be subserved. In this case, I put down the cost from El Paso at $50,000 a mile, that is, $25,000,000. This would make the whole cost only $6,000,000 over the value of the land granted. Beside, the company might take advantage of the other charters, and thus get in addition 16 sections to the mile. Connecting lines are either made or projected all the way to New-York. This is the shortest of all the proposed roads between the oceans. I believe that Matagorda would be the freight terminus. Either it or Galveston, though not very good harbors at present, could easily be made so. Texas has a full right to give away all the land she gives by those charters. Her course in this regard I consider eminently statesmanlike; she should give every acre away to open up her country to commerce. As it is, the inhabitants are so segregated that they have no motive to industry and commerce. Her cotton-lands are far superior to most of the Southern States. I think an investment in these lines would be the best that could be made."

Mr. Disturnell proposed, at a future time, to make an exhibit of the northern and central route.

THE DELAWARE, LACKAWANNA, AND WESTERN RAILROAD COMPANY.

Our first thought, suggested by reading a report of this company, is the extensive influence of a single step in internal improvements. No one is disconnected from others. On the location of the New-York and Erie Railroad, it was proposed to open the great northern coal basin of Pennsylvania. A charter was obtained and a company organized in 1850, for that portion between the basin at Scranton and the New-York and Erie Railroad at Great Bend. This was called the Leggett's-Gap Railroad. The name of this company was changed to that of the Lackawanna and Western Railroad Company, in 1851. In 1849, the charter of the Delaware and Cobb's-Gap Railroad Company was obtained, and the company was organized in 1850. In 1853, these two companies were consolidated. This line of railroad forms a part of the great line extending from Oswego, on Lake Ontario, to New-York. The several parts are as follows:

Oswego and Syracuse Railroad, - - -	35 miles.
Syracuse and Binghamton Railroad, - -	80 "
Binghampton to Scranton Coal-fields, - -	62 "
Scranton to New-York, via New-Jersey Central, -	125 "

or a total distance of 302 miles.

This company has secured some of the choicest lands in the valley. From Mr. Needham's report, it appears that the minable coal on the company's lands will EXCEED 50,000,000 TONS.

The mining lands of this company are situated in the Lackawanna Valley, south-west of Cobb's and Leggett's Gaps, and east, south, and south-west of the village of Hyde-Park; the town of Scranton being approximately in its centre. One portion of these lands lies outside or to the south-east of the natural boundary of the Lackawanna coal-field; the other and far more valuable part of the estate embraces all the south-eastern side and central tracts of the coal-basin, extending up the valley, north-east, to within a mile or so of the villages of Dunmore and Providence, and in the opposite direction, south-west, with some interruptions, two miles and a half from Scranton; its northern and north-western boundary being on the table-land north of the Lackawanna meadows. The amount of productive coal-lands thus situated, belonging to the two companies, is estimated at about 3000 acres.

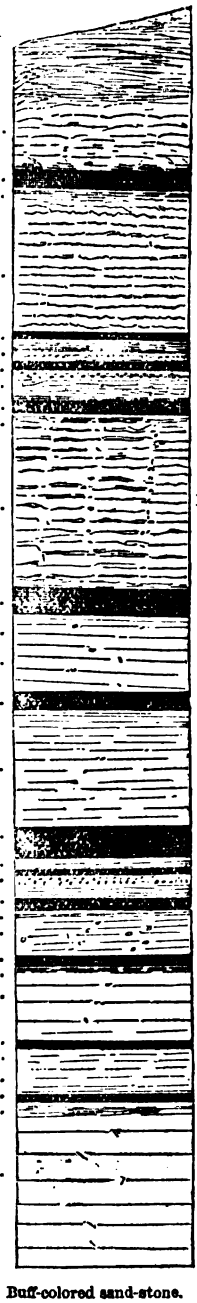
Reports have been made by Mr. Needham, and by Prof. H. D. Rogers, State Geologist, in reference to these lands. The former represents the general outlines of the workable veins on that portion which is known as the "Griffin Lot," as follows:

"The first in the *descending* order is the 'A' vein, 8 feet; the second, a 3 feet vein; then 'B' 4 feet, where it has been worked; 'C' 5 feet; 'D' 8 feet, and 'E' 15 feet, making 43 feet in 6 veins, all belonging to the upper series of free-burning or steam coals. *All* these veins would be worked in Schuylkill, and can be worked here; but the smaller veins would cost more in proportion, per ton, for mining, than the larger ones. Of the entire thickness of this upper series, 21 feet may be classed with the superior coals for generating steam, possessing great heating powers, a very active combustion, with rectangular fracture, suiting a condensed stowage, for oceanic navigation; containing little earthy matter, and leaving a residuum of about 7 per cent ashes. The lower series comprises five working veins, of a very dissimilar coal. The first of this second series, the 'F' vein, varies from 6 feet to 8 feet 4 inches pure coal, devoid of slate, of a semi-conchoidal fracture, and altogether one of the most splendid coals sent to market, excelled only by a small vein of the Lehigh, 3 feet thick, known as the 'clear vein,' the heaviest and purest *known anthracite.* This vein will be mined and sent to market, for the first time, this year (1854) from this coal-field. We hope to be ready in time to mine and send to market this year about forty thousand tons of this coal.

The next in the series is the big vein of Wilkesbarre and Pittston, varying from 9 to 18 feet. This, the 'G' vein, with its usual slates, measures on the Griffin lot 18 feet 1 inch; is a good hard, firm coal; rectangular fracture, well known in your city as the Pennsylvania Coal Company's. Then comes the 'H' vein, a superior coal, very similar in hardness, fracture and quality to the 'F' vein above mentioned, and is 8 feet thick. These three veins alone will produce, of good merchantable coal, on the Griffin lot, 27 feet in thickness, equal to 34,560 tons per acre, after deducting 20 per cent for mine-waste and supports. The coal of the three above veins, 'F,' 'G,' and 'H,' are all of the hard variety of anthracites; excellent for foundry, furnace, and smithing purposes; and with blowers, would answer well for steam purposes. I forgot to mention that the coals of the upper series are excellent steam-producing coals, *without the aid of blowers.*

Next, and last in order, are the veins 'I' and 'K,' 6 and 4 feet respectively in thickness. They are worked at Dunmore, by the Pennsylvania Coal Company, but are inferior in quality to the veins of 'F,' 'G,' and 'H,' although fair merchantable coals."

NUMBER.	STRATIFICATION.	THICKNESS.	COAL.
	Descending order.		
	Shales,	114 ft.	
A	Coal,	8	8 ft.
	Stigmaria shales,		
	Micaceous sand-stone and shales,	90	
B	Coal,	4	4
	Nodular iron-ore in stigmaria shales,	3	
C	Coal,	5	5
	Nodular iron-ore in sand-stone shales,	20	
D	Coal,	8	8
	Stigmaria shales,		
	Micaceous sand-stones,	101	
E	Coal,	15	15
	Stigmaria shale, black-band iron-ore,	6 in.	
	Micaceous sand-stones,	45	
F	Coal,	8	8
	Shales,	56	
G	Coal,	18	18
	Stigmaria shales, and	22	
	Nodular iron-ore,		
H	Coal,	8	8
	Stigmaria shales, and	20	
	Micaceous sand-stones,		
I	Coal,	6	6
	Stigmaria shales,	40	
	Micaceous sand-stones,		
K	Coal,	4	4
	Stigmaria shales,	30	
	Slates,		
L	Coal,	2	2
	Stigmaria shales,		
			86 ft.
	Conglomerate,	70	



Buff-colored sand-stone.

VERTICAL SECTION OF THE GEOLOGICAL FORMATION
Of the Coal-lands belonging to the "*Delaware, Lackawanna, and Western Railroad Company.*" By B. NEBEDIAH, Mining Engineer.

The capacity of the "Diamond-mine tract" is nearly as great, the product being estimated at 25,000,000 tons.

The following account is taken from the report of Professor Rogers:

GENERAL TOPOGRAPHICAL FEATURES.

Like the other Anthractic coal-fields of Pennsylvania, this large and rich basin of the Lackawanna and north branch of the Susquehanna is surrounded by a double belt of mountain summits; but instead of that usually entire separation of the inner and the outer ridges which is so conspicuous in the Pottsville, the Shamokin, and other coal-valleys, the intervening deep narrow valley of red shale is here only a high sloping platform or bench on the side of the exterior mountain, and the interior crest but a subordinate ridge or shoulder between this bench and the main valley.

The coal-field, or trough of the coal, containing strata, encompassed by this picturesque mountain rim, is a very elongated valley, some fifty miles in length, from Beech Grove to Carbondale, and not more than five miles wide in its broadest central portion, between Solomon's Gap and the entrance of the Susquehanna at Pittston. Its form is that of a very regular, symmetrical crescent, curving in its course as much as fifty degrees, the northern horn at Carbondale pointing nearly north twenty degrees east, while the western one at Beech Grove is directed only twenty degrees south of west. In its interior features this valley is extremely diversified, and it is full of landscapes of uncommon beauty. From Pittston to Nanticoke, or between the points where the Susquehanna enters and leaves the Basin, the northern half of the main bed of the valley is a wide, level, fertile plain, or low diluvial floor, watered by the tree-fringed river. A similar but narrower belt of low ground, underlaid in like manner with a deep deposit of drift or gravel, winds through the whole length of the upper north-eastern portion of the valley, or that occupied by the Lackawanna.

GENERAL VIEW OF THE STRATA.

Taking a comprehensive glance at the several rocky strata which surround and are embraced within the Wyoming and Lackawanna Basin, they will be found to constitute four distinct groups, differing in their positions, composition, and the value of their imbedded deposits.

1st. The first and lowest in the order of stratification is a thick series of gray sandstones, occasionally pebbly, and including beds of shale. This outcrops high on the inner slope and summit of the outer broad mountain-ridge of each border of the Basin. The formation is several hundred feet in thickness; and is the lowest or oldest of our American carboniferous strata, but in this part of the mountain-chain of the country, contains no coal nor any notable amount of iron ore. It is called the vespertine series in the nomenclature adopted by Professor Wm. B. Rogers and myself for the rocks of the Alleghanies. Some of the extreme south-eastern tracts of the Company's estate extend into this formation, where it forms the high mountain bordering the upper reach of the valley of Stafford Meadow Brook.

2d. Next in succession, overlying the previous set, and outcropping to form the bench, or sometimes valley, which follows the inner slope of the outer or main mountain all round the Coal Basin, is a mixed group of strata, red shales in the inferior portion, gray sandstones and buff-colored slates in the middle, and a peculiar hone-like, very close-grained calcareous sandstone in the upper. Such is the character of this formation in the vicinity of Scranton, and elsewhere on the borders of the Lackawanna division of the Basin, where its total average thickness does not amount to 350 feet, and where the

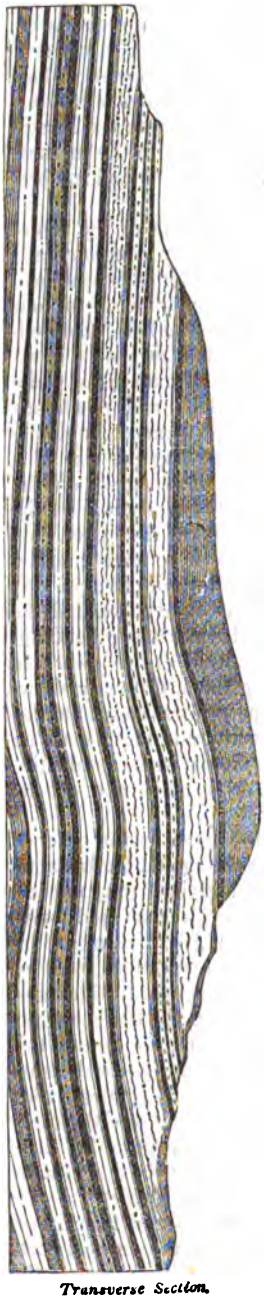
red shale of the lower member of this mass is extremely thin, and in places altogether absent. But further south-westward, especially from Solomon's Gap to Beech Grove, the red shale assumes great relative bulk, and the middle and upper divisions, as at Nanticoke, are comparatively quite reduced, the whole formation being here from two to three times as thick as where it bounds the Lackawanna valley. It is among the layers of the lower or shale group of this formation that we encounter the interesting *calcareous iron ore* of the Stafford Meadow Valley, now extensively mined there on the Lackawanna Iron and Coal Company's lands, and largely smelted in the furnaces at Scranton. The whole formation is the umbral series of mine and my brother's classification, or the middle carboniferous formation.

3d. Immediately over the fine-grained, hone-like sandstone of the top of the umbral series, rests the coarse, massive, white and gray conglomerate, which constitutes the base or supporting member of the productive coal measures, or upper carboniferous series; this is the seral conglomerate of our classification. All round the Wyoming and Lackawanna coal-field, this well-known and easily-recognized rock is composed of two sets of strata—a lower group made up in large part of extremely coarse pebbles of nut size, of white quartz and gray sandstone, compactly cemented into thick and ponderous beds—and an upper set, of less massive layers of a smaller grained conglomerate, and dark gray sandstones, the pebble seldom exceeding the size of a pea or small hazel-nut. The average thickness of the lower mass on the south-east side of the Basin is from seventy to eighty feet, whereas on the north-west side it seems nowhere to exceed forty feet; that of the upper, fine-grained rock, varies from sixty to ninety feet, but shows no such marked reduction in passing from its south-eastern to its north-western out-crop. At Scranton, on Roaring Brook, the coarser rock is about eighty feet, and the finer grained, which is here quarried, and makes a valuable, strong building-stone, is about the same thickness. A comprehensive study of the lower coal strata, and of the conglomerates interstratified among them, distinctly shows that even the main undermost, coarsest pudding-stone, or seral conglomerate, is itself properly but a member of the true coal measures, and in no sense an independent formation. There are districts in Pennsylvania where productive coal seams occur imbedded within this coarsest, lowest mass, and others, indeed, where such exist even beneath or outside of it.

4th. The last and highest of the formations of the region in the order of stratification is the coal formation proper. In the Wyoming and Lackawanna basin, this consists, as is well known, of coarse and fine-grained gray micaceous sandstones, pebbly in some of their beds; and of argillaceous sandstones, shales, slates, and fire-clays; some more siliceous and gritty; some more aluminous and smooth; and between all these are interstratified beds of anthracite of all dimensions, from a few inches to many yards in thickness. All the coal seams, with one or two very local exceptions, yield either white or gray ashes, and, as in the Pottsville and Shamokin basins, the coals of this character are overlaid by a group of beds, producing red and brownish ashes such as are not here met with, it is fair to infer that in this Wyoming valley we have the representatives of only the lower or white-ash series of the other great basins. Denuding action, which has been especially powerful here, may have swept off the once overlying and more exposed red-ash series, or these possibly may never have been formed in this northern district.

It is impossible to estimate with precision, until researches now in progress are completed, the total thickness of the coal measures in the deepest parts of the Wyoming and Lackawanna basin, nor to count with accuracy the

number of the available beds of coal in those localities. For my present purpose, that of a general sketch of the geology and vast mining resources of this valley, it will be sufficient to state here, that exact measurement has already disclosed, in the vicinity of Wilkesbarre, the widest and apparently the deepest portion of the coal-field, the existence of from 1000 to 1200 or more feet of coal-bearing strata, and the presence within these of sixteen or eighteen separate beds of coal; two or three of them being compound seams of great size, and about ten or more of the whole series being permanently of ample dimensions for profitable mining. This depth of the coal measures, and the number of the contained coal, seems to grow less, of course, from the centre of the basin towards its two margins, and also towards its two contracting extremities.



Transverse Section.

GENERAL STRUCTURE OF THE BASIN.

In general configuration, the Wyoming basin is a wide and shallow trough, somewhat deeper in the middle than at the sides, yet deepening so gradually toward the centre as to be, if we disregard the subordinate undulations of its strata, approximately flat. This prevailing levelness of its bed or floor, notwithstanding the considerable angles of dip—frequently more than thirty degrees—is at once apparent when we compare the great width of the valley—four or five miles in its middle district—within the very moderate depth of 1200 or 1500 feet, or perhaps 1800 feet, which my sections seem to assign to it, in this its most capacious portion. Laborious explorations and measurements have enabled me to bring to light, within the general basin the existence of a great number of nearly parallel lesser troughs or basins, with intervening saddles or anticlinal waves in the coal strata, and to trace these individually, and to develop the law of their direction and their effects on the local distribution of the beds of coal. These investigations have shown me that the same coal seams and other strata are repeated, within certain limits, from one wave to another, so as to maintain, despite the local steepnesses of dip, this average uniformity in the depth of the coal-field at any given cross section. This general levelness of the bottom is independently established by a comparison of the vertical thickness of the strata with the breadth of the valley.

The whole coal-valley may be likened to a flat-bottomed boat, tapering gradually from the middle towards each extremity, and as gradually

shoaling up in those directions; but the boat is not a straight one, but curves constantly, crescent-like, toward one side, and the resemblance is further deficient in the bottom not being smooth, but ridged with the waves, above spoken of.

THE COAL MEASURES.

It has been already stated that the coal-containing strata of the vicinity of Scranton appertain to the lower group of the white-ash coal measures of the anthracite basins; and it was also remarked that this group exhibits greater fluctuations in the dimensions and quality of the coal-beds than any other subdivision of the whole coal formation. These fluctuations, it is appropriate to add, belong equally, or in a greater degree, to the rocks which fill the intervals between the coal-beds. It would seem as if the physical conditions under which these earliest coal strata were deposited were more inconstant than those which belonged to the later stages of the formation. The spaces over which the nearly perfect state of repose of the surface prevailed, necessary to the accumulation by slow growth of the vegetable peaty mass producing each seam of coal, were evidently of a narrower geographical extent than afterward; and the currents and disturbances of the earth's crust, which buried these successive peat swamps under the clayey, sandy, and even coarse, gravelly strata that rest upon or between them, were obviously much more violent than in the middle and final ages of the great coal period.

Nowhere, perhaps, in the anthracite country, are the proofs of this instability of the surface during the first stages of the coal formation more conspicuously manifested than in the Wyoming and Lackawanna basin. Here we find, in certain neighborhoods, in the same few hundred feet thickness of these lower coal strata, as many as ten or twelve separate beds of coal, while in other localities there exist not more than half, or even a third of this number; and what is more material, the very same individual bed which in one quarter possesses an ample, or indeed superabundant thickness, is in another but a dwindled seam, too thin or too impure for profitable mining. Without attempting any close continuous tracing of the several coals, which can only be done as the consummation of an elaborate and protracted survey, I may exemplify the variability of these coal measures by appealing to the very different types which they assume in the three meridians of Solomon's Gap, south-west of Wilkesbarre; Spring Brook, south-east of Pittston; and the vicinity of Scranton.

At Solomon's Gap, this group of lowest coal measures, extending from the foot of the mountain north-west across the basin to the edge of the diluvial flats of the Susquehanna, includes in a thickness of nine hundred or one thousand feet as many as thirteen beds of coal of various sizes, from one foot to nineteen feet, and the total thickness of coal, fit and unfit for mining, embraced by this section, may be estimated at nearly eighty-four feet. But out of this aggregate quantity, the thickness susceptible of being profitably wrought, does not probably amount in all to more than forty-five or fifty feet. Traced eastward and westward, these coal-beds undergo, even in the space of two or three miles, some very remarkable variations. Thus the fifth in position from the bottom, from a thickness of seventeen feet at Solomon's Gap, enlarges in that distance to the noble bulk of twenty-eight feet, opposite to Wilkesbarre, beyond which neighborhood it seems again to decline even more rapidly than toward the south-west. These fluctuations arise partly through the coalescing of two or more beds into one, or conversely through a splitting and diverging of the thicker seams into two or three

thinner ones, or partly, again, by the gradual alterations of size of the same coals, independently of such unions and subdivisions.

If we turn now to the district of Spring Brook, we shall find all the features of the formation so altered as to present not one subdivision, neither coal-bed nor other stratum, which we can recognize or identify as a member of the series visible in the vicinity of Solomon's Gap. In a total thickness of several hundred feet of coal measures, embraced between the out-crop of the Main Pittston seam and the conglomerate of the mountain to the south-east, only six coals in all, according to the largest estimate, have ever been brought to light, after close and persevering researches there, and only two of these appear to have a size and purity adapting them for successful mining. There would seem to take place between the Solomon's Gap, or Wilkesbarre neighborhood, and this quarter, a progressive impoverishment of these lower strata in the number and size of their included coal-beds, and likewise a considerable thinning down of the entire formation. As a result, this portion of the southern skirt of the valley maintains at this time no collieries of any magnitude.

Another and opposite change, back to a very productive condition of the coal measures, is exhibited as we continue our progress along the same side of the basin north-eastward up the Lackawanna valley and approach the vicinity of Scranton.

In the immediate neighborhood of Scranton, a portion of the coal basin where the coal measures are unusually well developed by natural features in the topography, and through the researches directed by the companies, the coal rocks, counting from the upper surface of the seral or lower conglomerate to the highest sandstones of the *plateau* south-west of Hyde Park Village, disclose, upon careful measurements, an aggregate thickness of about seven hundred feet; and in this depth of strata the whole number of coals, large and small, amounts to no less than twelve, not estimating as separate seams any layers which might be regarded as subdivisions of compound beds. The assembled thickness of these twelve plates of anthracite is not less than seventy-four feet, taking for some their mean, for others their minimum dimensions; and the thickness available for market, under judicious mining, I would estimate at thirty-nine or forty feet.

To bring out in a clearer light the remarkable productiveness of this portion of the lower coal measures as they present themselves near Scranton, I will assemble, in a tabular form, the actual least thicknesses of the several coals within this bulk of strata, their net thickness of good coal fit for market, and the computed yield of such coal per acre from each bed.

TABLE.

Coals.	Least thicknesses.	Good coal.	Yield of good coal per acre.
K,	5 feet	3 feet	4,000 tons
I,	7 "	4 ½ "	7,000 "
H,	10 "	7 ½ "	12,000 "
G,	6 "	3 "	5,000 "
F,	12 "	9 "	15,000 "
D,	8 "	6 "	10,000 "
C,	6 "	4 ½ "	7,000 "
	54 feet	37 ½ feet	60,000 tons

These totals hold good of course, only for those portions of the coal-field which are underlaid by all the seven coals enumerated. If we wish to aggre-

gate the gross amount, the net amount, and the amount per acre, contained in the four middle beds, D, F, G, and H, which lie within a thickness of strata of two hundred feet, and spread beneath every acre of the coal-field, excepting only a narrow belt along its southern border, we shall find, on summing up the columns of the table, that the least total thickness of these coals is thirty-six feet; their yield in thickness of good coal, upward of twenty-five feet; and their productiveness per acre, the noble ratio of 42,000 tons.

CHARACTERS AND QUALITY OF THE SCRANTON COALS.

As a group, these Scranton coals are to be classed with the free-burning, white-ash anthracite, a very valuable variety, uniting the strength, or great *heating power* for which the true anthracites are preëminent, with that readiness of kindling and activity of combustion which distinguish the firmer semi-anthracites, and which the densest and hardest coals do not possess. Both in structure and composition the more ignitible of these coals hold a station apparently intermediate between the most compact anthracites nearly destitute of inflammable gases, and those more fissured and lighter varieties containing a notable amount of the carburetted hydrogen gases, and which I have elsewhere denominated the semi-anthracites. While the dryest and densest anthracites include about three per cent of their weight of inflammable gases, and the semi-anthracites, some seven or eight per cent, these Lackawanna coals, on the verge, as it were, of the class of anthracites or flameless coals, possess an average as much as five per cent of these free burning elements.

In point of purity or freedom from earthy matter, these coals of the vicinity of Scranton will compare favorably with the beds of the corresponding lower white-ash group of the Lackawanna and Wyoming basin generally, and, indeed, with the better class of anthracites anywhere throughout the coal region. Analysis shows that the portions which are mined for transportation contain not more than six or eight per cent of ashes, and this, it is well known, is a low proportion for merchantable anthracite coals. The earthy residue of these coals, being of the kind called white ashes, consisting chiefly of silica and alumina, and containing but little alkali, lime, or oxide of iron, and being capable therefore of withstanding a high heat without melting, or more than softening into a spongy cinder, are exempt from the serious defect of producing the hard, stony clinker caused generally by the red ash, and often by the so-called gray-ash anthracites.

The proportion of solid carbon—the amount of which in coals, from the best practical researches on fuel, must be accepted as very nearly the measure of their absolute heating strength—is, in the instance of these Scranton anthracites, about eighty-seven to eighty-eight per cent of the whole mass, a ratio only about two per cent less than distinguishes the dryest or least gaseous varieties in the Lehigh coal-fields, while the difference is amply compensated for in the gain of this amount of ignitible, inflammable gases—hydrogen and carburetted hydrogen—which serve materially to increase the promptness of kindling and rapidity of burning, or the total amount of heat evolved in a given time.

These Scranton coals, in their comparative purity or freedom from earthy matters, and large amount of carbon in their possession of a moderate density and some free inflammable gas, and in their square mode of fracture, combine in a high degree the three chief essential attributes of a superior fuel, namely, great absolute heating strength, quick ignitibility or activity of com-

bustion, and the power of packing closely. Other coals may surpass them in some one of these qualifications to a small extent, but I doubt if, on a fair experimental comparison of properties, any will be found to combine a larger total of efficiency in all these several ways.

With a view to exhibit more distinctly the excellences of the class of free-burning white-ash anthracites, such as these I have above described, I will conclude this essay with a condensed survey of the principal qualities essential to a

GOOD FUEL FOR PRODUCING STEAM, OR FOR DOMESTIC USES.

1. It should possess great actual heating power.
2. As far as consistent with the foregoing, it should kindle quickly, and burn fast, generating the largest amount of heat in the shortest time.
3. Its earthy matter should be small in quantity, and difficult to fuse; it will thus make little clinker, demand but little raking of its fires, and undergo but little waste in consequence.
4. It should contain but little sulphur.
5. The volatile ingredients of the coal should be free inflammable gases, not bituminous matters forming smoke; and they ought to be barely abundant enough to assist rapidity of combustion, as the larger the proportion of fixed carbon, the greater seems the heating power.
6. They should not be too tender on the fire, nor yet too refractory: a certain tendency to fall to pieces spontaneously while burning, but not an over amount of this, is a great desideratum, as it confers activity and steadiness of combustion; too much of it impedes combustion by increasing the friction of the air passing through the fire.
7. The lower the temperature at which an anthracite will kindle and maintain itself burning the more manageable, more active, and more economical will it prove.
8. The better a coal unites the tenacity necessary for economical transportation, with this medium amount of frangibility on the fire, the larger the effective result of a given quantity, from the time it leaves the mine.
9. And the greater the aggregate of positive heating power, rapidity of combustion, and compactness of stowage compatibly assembled in a coal, the nearer does it approach the ideal standard of a perfect fuel.

WILLIMANTIC (CT.) AND ITS FACTORIES.

THE river which has given name to this village, rises, unless we mistake, in our own State, in quite a secluded region, and then, after tumbling over the water-wheels of one or two furnaces and as many cotton-factories, in the town of Stafford, passing near Stafford Springs, it forms the boundary between Willington and Tolland, Mansfield and Coventry. Then, it sweeps away to the east, and in the bend, where its waters rush over immense beds of gneiss, (which rock, by the way, will split almost as freely as the native chestnut,) in the north-western section of the township of Windham, lies the village from which we now date. Thirty years ago, a dozen houses would have accommodated the population then basking in the sunshine of these waters, where now reposes a population of some two or three thousand, in the space of a

mile. At a place known for miles around as *the Slate*, for many years had been located a grist-mill and paper-mill. And here it was the writer, as he came from his father's farm with a couple of bags of wheat to be ground, learned to make paper in the old-fashioned way. Since, however, he has, in a like manner—namely, by looking on!—learned to make paper by at least two kinds of machines. Between the years 1820 and 1830, four companies, or prominent individuals, commenced their operations. One of these commenced in mills known as the Carpenter establishment. The next above on the stream was the mill or mills built and owned by the Messrs. Jillson. These gentlemen, men of enterprise, did much for the village. They were originally from Massachusetts. Dea. Lee, a gentleman well known in the vicinity, commenced the mill next above. The uppermost mill, or mills, were constructed by a company from Providence, whose agents were the Messrs. Tingley. At the time referred to, mill privileges were in demand. Agents of cotton-factory companies were then threading their way up and down the rivers and brooks to find a good place for a factory site. Then the railroads had not opened an access to hundreds of such places back in the country. The water in this stream is now used five times in the space of a mile, including the old grist-mill and paper-mill. It is believed that one of the best sites in the village remains still unoccupied, where the water can be used again to propel machinery. Some of the cotton-mills are of the largest class, and once were filled with the most delicate machinery, and turned out some of the finest fabrics in the country. In whose hands, and by whom occupied, are these large rock-built establishments at the present time, the writer has not learned.

One thing which renders Willimantic desirable as a place for factory sites, is the building material, already referred to, found not only in the bed of the river, but jutting out from its banks, and underlying the ground in various localities. This stone, by natural seams, splits very regularly into masses from six inches to a foot thick. Then the converging railroads are destined to make this beautiful, romantic, and rising village accessible from almost every point of the compass. The New-London and Palmer Road opens a communication with Norwich, fifteen miles distant, with New-London, New-York, and all the world; also, on the north, with Massachusetts, Vermont, New-Hampshire, the Canadas, and, if you please, the North Pole. Then comes the Providence, Hartford, and Fishkill Road, completed from Hartford to Willimantic, and almost finished from Willimantic to Providence. These two roads, running for some distance side by side, cross each other at grade at the depot. Finally comes, or rather *is coming*, the Air-Line Road, uniting Boston and Middletown, New-Haven and New-York; all meeting here, give the village greatly the advantage over almost any other in the neighborhood or in New-England. Then another thing rendering the locality desirable, is the perpetuity of the waters of the river. These, in the very dryest season, rarely fail. And here I would observe, that about three or four miles above the village empties one of the choicest streams, and at the same time most useful, which flows on the face of the globe. It is a stream issuing from Coventry Pond, a large sheet of water, fed entirely by springs, and situated some two hundred feet above the bed of the Willimantic. On this stream, in the space of two miles, are situated eight or ten mills in succession, with room for more, all governed by the grist-mill as to the amount of water. And there flows that pure, limpid stream, right from the bosom of the earth, in a perpetual flood, just so large, year in and year out, without any increase from the descending rain or the dissolving snow, or any diminution from the parching drought. It is a perpetual fountain, a real god-send to the village of Willimantic.

The village at the present time contains, I should judge, about five hundred families. It contains three church edifices—a Congregational, a Baptist, and a Methodist. Business is here ever quite lively, yet I understand complaints come from the merchants that the railroad facilities carry all their customers to Norwich and New-London, on the one hand, or to Hartford on the other. Their complaint may be founded in reason; but what is their loss is the gain, not merely of the cities mentioned, but of the people in and around the borough of Willimantic. Ever would we have the sunshine of prosperity fall on this village, this monument of Whig skill, foresight, and enterprise; for every manufacturing village in New-England is a monument, more durable than brass, of the benevolence, the far-sightedness, the energy, and the true patriotism of Whiggism. Yours, truly, J. S.

DETROIT.

A CORRESPONDENT of the *Portland Transcript* writes as follows:

Unlike most other Western cities, Detroit is situated upon high land, which rises from the water-level to the height of thirty-five or forty feet. It is situated upon the west bank of the Detroit River, about four miles from its source and twenty-four from its mouth.

The waters of Lakes Superior, Michigan, Huron, and St. Clair, that move eastward to the Atlantic, find an outlet only through this river. It rises in Lake St. Clair, pursues a southerly course, and discharges its pure water into the noble Erie. It is broad and deep. Opposite the city it is three quarters of a mile wide, and as deep as can be desired, being twenty feet deep at the docks, and not far from fifty feet deep in the middle of the river.

The principal streets run nearly parallel with and at right angles to the river. They extend for miles in as straight a line as the needle can dictate; they are all very wide, and shaded on either side with a double row of young thrifty trees. Jefferson avenue, the Broadway of Detroit, runs a little to the east of north; it is four miles in length; the side-walks are each fifty feet wide, and the street proper is one hundred feet. This gives a spacious avenue of two hundred feet in width! It, with other principal avenues, is paved with limestone. Let the traveller promenade the walks of this avenue, on some bright summer's day, and he will find himself shielded from the sun by the overarching trees; and as he passes on and notices the stately brick mansions, whose attractiveness is enhanced by tasty yards of shrubbery and flowers, observing the "city-fashions," and people moving to and fro, afoot and in elegant vehicles, he must pronounce Detroit a city not wanting in beauty or interest. The dwelling-houses and stores are mostly built of brick and wood. No granite is to be found in this Western country. All the stone is composed of lime.

The well-water of the West is unhealthy. But this source of ill is here obviated by using the water of the Detroit River. It is pronounced by chemists as healthy as any water in the world. Water-pipes ramify all parts of the city, and the steam-engine, like the heart, sends the water coursing along through these deep-seated arteries, to give health and animation to 35,000 human beings.

And not only will the traveller find Detroit possessed of beauty and health, but he will find it a city of business. Her commerce is extensive, being in

good communication with five inland seas, and all their tributaries and outlets. Her harbor is pronounced one of the safest on the lakes. Her docks extend over three miles. Two railroads terminate here, the Michigan Central and the Pontiac—the first at the south and the latter at the north end of the city. The first is 282 miles in length, extending across the entire State of Michigan to Chicago, the "New-Orleans of the North." It adds much to the business and wealth of the city. Its earnings last month amounted to over $109,000, which, like the ocean-tide, must ebb and flow, replenishing the poor man's pocket and adding to the rich man's "pile." The Pontiac road is but twenty-five miles long, but in one or two years it will be extended to Grand-Haven, 280 miles, a port on the eastern shore of Lake Michigan, nearly opposite to Milwaukee. Detroit was settled by the French in 1670. Its population is made up of people from the New-England, Middle, and Western States; and I doubt not but every state of Europe is here represented.

A MAINE BOY.

A NEW TREE.

A BEAUTIFUL tree, unknown to other parts of the Union, is thus described in the *Oregon Times:*

Mr. Quincy A. Brooks has placed before us the branch of a tree or arboret, accompanied by the following communication:

A strange and beautiful tree has been discovered in Washington territory, which is not known to exist in any other part of the habitable globe. The tree is destined, I think, to make some noise in the world. It is remarkable, because its like is not to be found elsewhere, and on account of its great beauty and fragrance. The tree varies in height from one to seven feet; the leaf resembles that of a pear, while the trunk and branches look like those of the orange tree. The upper side of the leaf is thinly coated with a gum having the appearance of oil, and of the consistence of honey. Handling them causes the gum to adhere slightly to the fingers.

The gum, as well as the leaf and bark, is highly odorous. The fragrance, which is quite strong, resembles that of bergamot, or ripe fruit, and a few leaves are sufficient to perfume a room. A leaf, fully wrapped up in paper, so as to be entirely concealed, was handed to several persons, with a request that they would tell by the smell what it was. All expressed themselves highly delighted with the fragrance, but gave different answers as to its character. Some said it smelled like ripe pears; some said that it was bergamot; whilst others thought it smelled like ripe apples. The flower resembles that of the white jessamine.

This will certainly make a very beautiful and desirable ornamental tree to grow in our gardens, around our dwellings, near the parlor window, or to form a choice bower. Its intrinsic value for these purposes is greatly enhanced by the consideration that it is an evergreen. The specimen is brought from my farm, and is taken from a grove of about a quarter of an acre. The plant is very rare, even here. The oldest settlers of the country say they never saw it growing elsewhere. Still, I have no doubt it will be found in other places. It has been known to the priests of the Mission of St. Joseph, for some years, but has not attracted attention until recently.

THE NEWER DECIDUOUS TREES AND SHRUBS.

BY HENRY W. SARGENT, WODENETHE, FISHKILL LANDING, N. Y.

The last No. of the *Horticulturist* contains the following, under this title: it is written by a skillful amateur, and is worthy of especial consideration. We commend the suggestions and opinions as entitled to more than ordinary consideration. Most of our readers know that "deciduous" trees are those which lose their foliage in the fall:

In addition to the more common and usually planted deciduous trees and shrubs, there has been a great and very charming accession to our ornamental plantations, within the past five or six years. The searches of Dr. Hooker, Messrs. Fortune, Douglas, and the other collectors of the Royal Botanical Garden, at Kew, and of the Duke of Devonshire, have been attended with the greatest success; in addition to which, our own active intercourse with California has very materially increased the variety, which is now becoming gradually acclimatized and adopted into the gardens and pleasure-grounds in this country.

Among the many new and beautiful plants which seem to have proved perfectly hardy, even as far north as Albany, and perhaps further, the *Forsythia viridissima* and the *Weigela rosea*, are among the most attractive; the former, one of our earliest and most profuse blooming spring shrubs; and the latter, covered with its roseate flowers from the middle to the last of May, partaking somewhat (though much more beautiful) of the character of the Fly Honeysuckle.

Among the newer Magnolias, the *M. fuscata, cordata, Frazeri, longifolia, striata*, and *gracilis* all prove quite as hardy as the *conspicua, Soulangeana, tripetala, acuminata, macrophylla, glauca*, etc., all of which, say twelve or more, are quite hardy here, and should be in all collections.

To this portion of plantations, which all flower about the same time, should be added the *Paulonia imperialis;* the different varieties of Hawthorn—the single white, red, and pink, [these three grafted on the same stock, have a pretty effect,] the double white, the double red, and the variegated leaf; and the *Andromedas*, [these are evergreens.] The English Azaleas, than which nothing can be more brilliant and gorgeous, and the newer Belgian varieties; the TRUE *Deutzia gracilis* and *Deutzia scabra;* and the *Ribes sanguinea*, (double,) the *Ribes Gordoni*, and the *Ribes speciosa* are all beautiful and rare. The double-flowering Sloe, the double-flowering Plum, Peach, Cherry, and Apple, and the *Spiræa prunifolia*, are all beautiful. To these add the double pink, white and yellow Horse-Chestnut, and the dwarf Horse-Chestnut, all blooming in quick succession.

There is no end to the Spiræa family, and they abound in beauty. The many are well known. *Lindleyana, Douglasii, Reevesii*, and *prunifolia*, are among the newest.

The Chinese Wistaria, if trained to a pole eight or ten feet high, and kept well cut back for some years, will, in process of time, have all the beauty and appearance of a weeping tree, and what is even more valuable, bloom in succession all summer.

The French and African Tamarisks are pretty and hardy.

Among the variegated trees and shrubs, the variegated Sycamore, Oak Elm, Beech, Chestnut, Maple, Horse-Chestnut, Syringa, Euonymous, Currant,

and Thorn all do well upon this place, and are striking and interesting varieties. The variegated-leaf Dogwood is very rare and curious.

The cut-leaved family is also very curious. The prettiest of these are the cut-leaf Beech, the cut-leaf Horse-Chestnut, and the cut-leaf Ash; though the cut-leaf Linden, and cut-leaf Birch, are desirable in a collection. [The cut-leaved Birch is, to our taste, one of the most elegant trees recently introduced.—Ed.]

The purple trees and shrubs are the copper and purple Beech, the purple Filbert, and the purple Berberry. A few of these intermingling with the fanciful, gay foliage of the variegated Sycamore, Syringa, Thorn, etc., have the prettiest effect, if not overdone, or too much or too glaringly exposed.

The weeping trees are now generally so well known as hardly to require mention. The old and new Weeping Birch; the lanceolate-leaved Weeping Birch; the green and purple Weeping Beech; the old green, the yellow, and the lanceolated Weeping Ash; the Weeping Sophora; the Weeping Horse-Chestnut, Oak, Elm, Poplar, Thorn, Laburnum, Cotoneaster, Peach, Cherry, (three varieties,) Euonymus; beside half a dozen more of the smaller shrubs, grafted standard high, and allowed to weep down, such as the *Caragana arenaria, Euonymus linifolia, Caragana frutescens, Cytisus lessifolia*, etc.

One of the most desirable and beautiful trees, at this season, is the *Virgilia lutea*—beautiful in its habit and foliage, and exquisite in its bloom.

The purple and oak-leaf Laburnum are worth a place in any shrubbery. The oak-leaf Hydrangea is quite hardy and desirable.

For hedging, the most beautiful are the Hemlock, the English Yew, and the Beech; the most serviceable, the Buckthorn, Washington Thorn, and Osage Orange.

Among the Elms, the *Ulmus glabra pendula*, the Scampston Weeping, and the Camperdown Weeping are very remarkable.

There are a good many fine foreign Elms, not pendulous in their character, yet well worth planting, such as the Chichester, the Cornish, the Exmouth, the Huntington, the English Cork, the Dutch Cork, the Scotch and the English Upright—a most valuable tree, from its property of retaining its foliage green, long after the surrounding trees are stripped.

Among the rarer Maples, are the silver-striped leaf; the Norway, (the finest, I think, of all Maples:) the *Acer Tataricum;* the English, with a very dense, round, habit of growth; and the purple Maple, with leaves of a rich dark green externally, and of a chocolate brown underneath.

Beside the Ashes above enumerated, are the Willow-leaved; the Aucuba-leaved, blotched with yellow, like the *Aucuba Japonica;* the Myrtle-leaved; and a new and pretty variety originated, I believe, with Messrs. Ellwanger and Barry.

The Turkey, the Overcup Oak, and the English Royal, Lucomb, and Fulham, and our different American varieties, are, of course, all desirable, where the size of the place will admit.

I shall end this chapter with one more tree, which to my taste is, among deciduous trees, one of the most graceful and fairy-like of all of the large collection I have here, and that is the new Weeping Larch, grafted twelve feet from the ground, and certainly most charmingly graceful in its swaying, pendulous habit, as much so as the Weeping Willow.

THE FIG.

THE *Fig*, (Fiscus Carica) should be generally cultivated throughout the Southern or planting States, on account of its healthy and magnificent dessert fruit; and the best and most approved varieties imported by our intelligent and enterprising Southern nurserymen, from Italy, the shores of the Mediterranean, and the South of France and Spain, where new and extra rare and choice varieties are yearly springing up, and I trust ere long will be produced in like manner in the South, particularly in that El Dorado of a climate, Southern tropical Florida. The few isolated varieties now in cultivation with Americanized names, induce me to furnish you with a correct description of a few of the rarest and most approved varieties of the fig. It is by forming such a collection of names, and by a judicious comparison of the fruits, that we are to arrive at any degree of perfection in the naming or selecting of fruits. Apropos: the fig-tree delights in a *light, rich soil, which is supplied with water within the reach of the roots.* Its nature is to produce two crops in the year. The first crop, which is produced on the points of the shoots of last year; the second crop is produced on the shoots of the current year. Among the best varieties grown are the following:

1. *Brown Ischia.*—Fruit globular, with a pretty large eye; large; pinched in near the foot-stalk; color brown or chestnut on the outside; purple within; flesh sweet and high flavored, containing large grains; ripens in July; will produce two crops annually; originally from the island of Ischia.

2. *Black Genoa.*—Fruit long, swelling pretty large at top, where it is obtuse; the lower or part next the foot-stalk very slender; color dark-purple, approaching to black, having a delicate bloom over it, like some sorts of grapes and plums, which is easily destroyed by handling; inside color bright red; flesh high flavored; ripens early.

3. *Early White.*—Fruit small, roundish, somewhat flattened at the crown; foot-stalk very short; skin thin; color white; when fully ripe, of a whitish-yellow; inside color also white; flesh sweet, but not very high flavored; ripens in June. Under favorable circumstances produces two crops annually.

4. *Genoa Large White.*—Fruit large, globular, somewhat lengthened toward the stalk; skin thin; flesh high flavored; color yellowish when ripe; inside color red; ripens about the end of July. Will, under favorable circumstances, produce two crops annually.

5. *Black Ischia.*—Fruit short, middle-sized, somewhat flattened at the crown; color black when ripe; inside color deep red; flesh very high flavored; ripens in June; an excellent bearer; originally from the island of Ischia.

6. *Malta.*—Fruit small, much compressed at the top; much pinched toward the foot-stalk; color brown, both outside and in; flesh very sweet and well flavored; ripens in June, but when left to shrivel on the tree becomes very delicious.

7. *Murray, or Brown Naples.*—Fruit rather largish, globular; color light brown on the outside, with faint marks of a dirty white, the inside of nearly the same color; flesh well flavored; ripens about the beginning of August.

8. *Blue, or Purple.*—Fruit pretty large, oblong; color dark-blue or purple; is a good bearer; ripens early and produces two crops annually.

9. *Naples, Large Black.*—Fruit long, somewhat compressed at the ends;

foot-stalks pretty long; leaves more deeply divided than in most other varieties; color dark-brown when fully ripe; outside color inclining to red; flesh high flavored.

10. *Italian, Brown Naples, Brown Turkey, Brown Italian.*—Fruit small, or middle-sized, obovate; color, both outside and in, brown; flesh rich and delicious; is of slender habit, and well calculated to force when planted in pots or small boxes.

11. *Green Ischia.*—Fruit oblong, almost globular at the crown; skin thin and delicate; color green, but when ripe, the purple flesh shines through the thin skin, and gives it the appearance of being stained with purple; the flesh high flavored.

12. *Brunswick, Hanover, or Madonna.*—Fruit long, pyramidal; very large; skin pale, green on the shaded side, next the sun of a brownish-red; flesh pinkish, extremely rich, sweet, and high flavored; the leaves deeply and more beautifully divided than in any other variety. This is said to be one of the most useful of the hardy figs. It is, perhaps, the largest purple fig we have, and the most useful variety that can be selected for a small garden.

13. *Marseilles, White Marseilles.*—Fruit small; the skin pale green; flesh white, dry, sweet, and rich; is admirably calculated for the forcing-house.

14. *Gentile.*—Fruit middle-sized; color yellow when ripe; flesh of nearly the same color; ripens late, and is a bad bearer.

15. *Lee's Perpetual*, originated by Mr. Lee, of Hammersmith-Nursery, is said to be one of the best bearing figs we have, and should be introduced nto all fig-collections.

16. *Ischia Small Brown.*—Fruit pyramidal and small, with very short foot-stalks; color brown; flesh inclining to purple; very high flavored; and is an excellent bearer.

17. *Ischia Yellow, Cypress.*—Fruit large, pyramidal; color yellow when ripe; flesh purple and well flavored; leaves large and not much divided; tree grows luxuriantly; a shy bearer.

18. *Nerii.*—Fruit rather less than the Marseilles, and more long in shape; skin pale greenish-yellow; pulp similar in color to that of a pomegranate; much the richest fig known; there is in its juice a slight degree of very delicate acid, which renders it peculiarly agreeable to most palates.

19. *Pregussata.*—Fruit large; skin reddish-purple; pulp deep red; remarkably rich, sweet; seed unusually small.

20. *Small Brown Ischia.*—Fruit small; skin brown; pulp purple, of a very high flavor; leaves less divided than most sorts.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

GOLDEN OR BASKET-WILLOW.

MESSRS. EDITORS: I have the pure golden or basket-willow, and could furnish several thousand cuttings for planting to any person who wishes to raise it. It will make good cotton-baskets, or fruit or work-baskets. Should any person desire cuttings to plant, send me their address and number wanted, and (10) ten cents a-piece, I will box them up and forward as directed.

Yours, very respectfully, G. W. BERFORD.

College-Hill, Miss.

NATURAL COKE IN VIRGINIA.

At a recent meeting of the Boston Society of Natural History, Prof. Wm. B. Rogers communicated some observations recently made by him on the *Natural Coke* and the associated igneous and altered rocks of the oolite coal region in the vicinity of Richmond, Virginia. In the district on the north side of the James River, where the most valuable seam of coke has been explored, it is at present wrought by two vertical shafts. In that nearest the out-crop, the coke is reached at 112 feet from the surface, in the other at 207 feet, the dip of the coal-measures being nearly west, and at a low angle. A third shaft, recently wrought, which lies nearer the margin of the basin than either of the preceding, cuts the stratum of coke at the depth of 90 feet. A bed of whinstone, or coarse, gray trap, is intercalated in the coal-measures of this part of the basin, intersecting the two first-mentioned shafts, but cropping out a little west of the third. This bed is met with in the deepest and most western of the shafts, at a distance of about 100 feet from the surface, and is more than 30 feet thick where it is cut through, but in the next shaft it is at a depth of less than 30 feet, and has thinned down to about half the preceding thickness.

One of the most remarkable effects produced by this igneous bed is seen in the stratum of carbonaceous fire-clay which lies next beneath. This, which in the second shaft has a thickness of 11 feet, has been greatly indurated and made to assume a columnar structure, by which the whole mass is converted into a congeries of closely-packed five and six-sided prisms, often quite regular, usually about half an inch in diameter, and always at right angles to the lower surface of the trap.

A portion of this bed, originally occupied by impure coaly matter, presents the same columnar structure, but the material is a compact plumbaginous coke, with much earthy matter intermixed. The general aspect of the gray part of this bed strongly resembles that of the coarser varieties of fire-brick after they have been long exposed to intense heat. This is what might be expected; for in the bed in question we have the very material of fire-brick, and in the overlying trap we have a source of igneous action, which, in the originally molten condition of this substance, could not fail to work great changes in the contiguous strata. This columnar indurated clay, or natural fire-brick, when recently broken, emits a most offensive odor, partly that of sulphuretted hydrogen, and partly, perhaps, caused by a sulphuret of carbon.

At the depth of about 70 feet below the bottom of the trap, occurs the bed of natural coke for the mining of which chiefly these openings have been made. This interval below the fire-clay is occupied by bluish and drab argillaceous and sandy slates, with some coarse sand-stone, the former abounding in impressions of plants, among which may be noted Equisetum columnare, Zamites oblusifolius and Taeniopteris magnifolia, forms which many years ago Prof. Rogers pointed out as marking the oolite age of these coal-bearing strata. The baking action of the trap is curiously shown in all these fossils. The coaly matter of the stems and fronds, when closely examined, is seen to be blebby or blistered. It is, in fact, coke, which, while it retains the outlines and stronger markings of the plant, has in its partial fusion obliterated all the finer characters of the organized surface.

The coke, where it has been successfully mined, forms a bed about five feet thick, including but little slate, and presenting nearly a homogeneous mass of

a bluish-black color, uniformly vesicular and light enough to float in water. It retains only a minute fraction of the volatile ingredient of the unaltered bituminous coal of this region, but it ignites readily and burns like the compacter kind of ordinary coke. Throughout the bed, but especially toward the top, it presents a partially columnar structure. Where this structure is marked, the coke is found to crepitate when heated. In some localities on the south side of the James River, where the whole mass of coal and adjoining shale has been rendered completely columnar, the material, in the process of heating, breaks up with an explosion like the crack of a pistol, at the same time projecting its fragments to some distance from the grate.

The gradually diminishing influence of the trap-bed, as we recede downward, is illustrated by the section in one of the shafts, which embraces a thickness of fifty feet of strata below the seam of coke above described. After passing through indurated fire-clay, lying immediately beneath the coke, we have a thickness of about twenty feet of slates, followed by a thin seam of semi-coke, or coky coal—more bituminous below than at top; and after this, descending through some twenty feet more of slates and sand-stones, we come upon a bed of bituminous coal, which appears to have sustained no alteration beyond the development, throughout the mass, of a columnar structure. In the deepest of the three shafts, the seam, now wrought under the intelligent direction of Col. Worth, corresponds to the coky coal above described, the lower layer retaining much of its original bitumen. In all these workings the gradation of metamorphic influence is beautifully marked within a distance of less than fifty feet of strata, from the greatly altered shale or fire-clay immediately beneath the trap, through the successive slates and coke-seams, to the unchanged bituminous coal at the bottom of the section.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

AGRICULTURAL SOCIETIES OF MASSACHUSETTS.

My Dear Sirs: In an interesting article in the last number of *The Plough, the Loom, and the Anvil* on government patronage, taken from *De Bows' Review*, I notice that our little State of Massachusetts is credited to "twelve agricultural societies, and in many of these societies several counties together." Since reading that excellent article, it has occurred to me that some more facts, with regard to the agricultural progress of our "Ancient Commonwealth," may not be uninteresting to your general readers, while at the same time they operate as a stimulant on some, to increase the number of *similar* institutions through the country.

There are now in Massachusetts sixteen incorporated agricultural societies, all in successful operation. These societies hold, in the aggregate, property to the amount of $109,911.10, and have in permanent funds, $92,816.54. Three of them, Norfolk, Worcester, and Middlesex, hold real estate as follows: Norfolk to the value of $6129.95; Worcester, $5964; Middlesex, $2000. The disbursements of all these incorporated societies in 1853 were $21,014.89. The amount paid to them by the State, in that year, was $8782; receipts from new members and donations, $6376.50. Each of the societies, except Barnstable, receives from the State $600 a year, and this society has $362. The amount paid in premiums by the several societies the last year was $9064.73, which was divided among about two thirds of the towns of the commonwealth.

The fairs and exhibitions of these societies are held in September and October, and the most of them continue two days.

The Massachusetts Society for the promotion of agriculture was established in 1792, and in due time a list of premiums was offered, and an exhibition held at Brighton, the great mart for selling cattle and other animals for Boston market; and a ploughing match was instituted in connection with these cattle shows. The Society still exists, with a fund of $23,500, and an annual income from the State amounting to $600, but holds no annual exhibition. Their expenditures in 1853 were $600; for a course of lectures on the horse—of which we suppose the resident members had the benefit; we are sure the people had not—$460.74; for care and keep of the Society's Alderney stock, $250; paid in premiums at the Springfield national exhibition of horses, and miscellaneous expenses, $45.62.

Its principal benefits have heretofore arisen from its importation of valuable animals, of whose use kindred associations in the State have had the benefit by a gratuitous loan, so that in its former proceedings its influence has been more like that of an auxiliary than of a parent institution.

The Kennebec Agricultural Society was instituted at Augusta, in the State, (then province of Maine, and associated with Massachusetts,) in 1800, and incorporated in 1801. This Society, of course, ceased to be an appendage of Massachusetts on the separation of Maine, and its admission as a new State in 1820.

An Association of Farmers was formed in Middlesex County in 1796, and incorporated in 1803, under the style of "The Western Society of Middlesex Husbandmen," a name which was afterward changed by the Legislature to "The Society of Middlesex Husbandmen and Manufacturers," and now known, we believe, as "The Middlesex Agricultural Society."

The first agricultural exhibition in Berkshire was held in 1809, and consisted mainly of a pair of Merino sheep, introduced by the Hon. Elkanah Watson, who was a principal actor in the formation of the Berkshire Agricultural Society, which was instituted in 1810, and incorporated in February, 1811. The utility of this Society is now manifest in all parts of our county. How far its salutary influence may have extended into other sections, we have no positive means of saying. The Hampshire, Hamden, and Franklin Society, embracing the territory of the old county of Hampshire, and covering the beautiful and luxuriant valley of the Connecticut, from Connecticut to Vermont, with the summit of the Green Mountains for its western, and the hill of Worcester for its eastern boundary, was formed in 1818. The same year similar societies were formed in Worcester and Essex counties.

The favor in which these elder associations have been held in their respective districts, is shown by the fact that in Worcester county there are now three incorporated agricultural societies. In Hampshire, Hamden, and Franklin, there is an incorporated society in each county, which, with the parent society, makes four, besides at least three highly prosperous ones, which are at present unincorporated.

In Berkshire, it was found, some years since, that in consequence of the extent of territory, the parent society did not fill the wants of the population, and a coöperator was planted in South-Berkshire, which, if it has not the age, has the beauty and strength of the county society. Although some jealousies existed in the early history of the new society, and doubts were tolerated as to what its eventual influence might be, yet time has fairly buried the jealousies beyond the chance of a resurrection, and the doubts which have hovered over its path have passed away like the morning vapor, which

passes over the earth, to awaken new beauty in its flowers, and give freshness to its verdure, when the advancing sun lends his more potent rays to smile on the freshness that greets it in its pathway.. The two societies have long worked in beautiful harmony, each happily advancing the prosperity of the other.

In horticultural matters the advances of the State are well known. The Massachusetts Horticultural Society has a reputation too well known to need a comment. Nearly every county now sustains similar institutions, and the improvements they seek to promote are becoming frequent everywhere.

A Board of Agriculture was established in 1852, which employs a secretary, paid by the State, and its benefits are becoming more and more appreciated, as they more fully develope themselves.

But there is another wheel, humble as it may be, in this machinery of rural improvement, whose benefits can not be over-estimated. This is the Farmers' Club, several of which have been in existence long enough to test their value and render them favorites wherever they have been sustained. Several of them, which may yet be more fully noticed, exist in the western part of the State, while within the last year their number has been beautifully augmented in the eastern counties.

Yours truly, W. H.

Elmwood, June 13, 1854.

MINERAL MANURES—COM. THOS. AP CATESBY JONES.

We find that this eminent gentleman is engaged *con spirito* in the science and practice of agriculture, and thus expresses himself in relation to some very important topics:

Of all the concentrated natural and chemical manures, now in general use by farmers and gardeners, Peruvian guano is decidedly the favorite. It may not always be so. It ought not now to be the case. That upon extremely poor lands, incapable of vegetable production without the use of powerful stimulants, 200 pounds of guano per acre will produce an astounding crop of wheat, etc., can not be denied; and a clover-seed be sown with the fall crop, or on it, in early spring, a fair crop of clover may follow next year, if the season be favorable; and if this clover be well plastered and ploughed down in June, and again ploughed and seeded with rye or wheat in August or September, there will be an improved base to work on, by a regular rotation, such as I have already laid down, which must be pursued, or the benefits of the guano will be lost, and the land will be in a worse condition than ever. But guano should not be applied the second time to the same land, unless in combination with other fine manures; nor should it ever be applied in its crude state to land that is in good heart, that is, land that will bring thirty bushels of Indian corn or fifteen bushels of wheat per acre, without it. Not but that guano on some such land might increase the product of both wheat and corn enough to pay for itself, but if it should, the soil will be robbed of its fertility, and will be left in a far worse condition than when the guano was first applied; at least, such have been my own results in its use, and such is the universal character of guano in Peru, as I have learned, upon personal inquiry, from the mouths of all persons (with whom I conversed) engaged in gardening and agricultural products around the city of Lima, the capital of Peru,

from whence we obtain the best guano. I have frequently been in Peru, first in 1835, again in 1842–3, and more recently in 1848, and on each and every occasion, I took the greatest pains to obtain all possible information as to the value of guano as a manure, and the mode of applying it to field and garden culture, as well as to its effects upon the land; and with one accord, and without a solitary exception, I was told that land stimulated by the use of guano soon became utterly worthless, unless the stimulus was kept up by repeated applications. This was the reason assigned for so little use made of guano, where the cost of the article is merely nominal, not exceeding more than half what we willingly pay for leached ashes in the District of Columbia. Of all the concentrated manures for sale in our sea-board cities, crushed bone or bone-dust is undoubtedly the best; its effect upon the soil is both prompt and permanent; at least, a single application made by me fifteen years ago, is still quite visible, although the ground has been heavily cropped ever since. I found that one bushel of crushed bone was equivalent to one double horse-cart load of good farm-yard manure. Forty such loads is the least that will enrich an acre of worn-out land sufficiently for a good crop of corn; hence, at the present price of bone-dust, that manure is beyond the means of most farmers for the renovation of poor lands.

Poudrette, of the Lodi (N. J.) Works, is an excellent manure for forcing vegetables to an early maturity; hence its great value to market-gardeners in the vicinity of cities; but, like guano, it imparts little or no abiding fertility to the soil.

Chappell's Fertilizer has opponents as well as friends. Its effect does not appear to have been uniform in the hands of different persons, nor even when applied by the same person at different times. Such discrepancy is not very marvellous, since we know of no human agency that can by any possibility produce precisely the same results in the product of the soil, every year, for a series of years. If this be true, and no practical farmer can gainsay it, ought the Fertilizer, any more than guano or other manures, all variable in their effects, be condemned and thrown out of use?

The cost of the Fertilizer ($1 per 100 pounds) is too high for farmers in general, 600 pounds per acre being necessary to bring very poor land up to a productive state. I am now in my third year's free use of this chemical preparation, with highly satisfactory results in every instance, the cost being the only objection so far with me. But even this is much reduced when the prolonged beneficial effect of this renovator is duly considered and compared with that of guano. The first two years I used the Fertilizer, (Chappell's,) I put two barrels or 600 pounds to the acre, without admixture; but, on account of expense, about a year ago I commenced a more economical use of it, by admixture with cheaper substances, obtained without money, such as rich earth, or fine manures sufficiently pulverized to be conveniently sowed by hand. For proportions see appendix.

Of the phosphates of lime, to be purchased in most of the large cities on the sea-board, I have only used Chappell's bi-phosphate of lime, 100 pounds of which, in common with other more bulky substances, to be sowed broadcast by hand, and harrowed in with small grain, or sowed in the drill, and dropped in the hill for corn and all sorts of roots, makes one of the best manures I have ever tried. See appendix.

Plaster of Paris, slaked lime, wood-ashes, and common salt, combined in due proportions, may, after all, at the same or less cost, be more profitable to the farmer than any manure yet known.

Considering lime as the only sure foundation to any good system of farm-

ing which may be adopted for the renovation of lands exhausted by injudicious culture, I will devote a few lines to that particular subject, by stating what I would do if I had my work to do over again, and which, of course, I recommend to all other beginners in their efforts to improve worn-out lands.

First, then, when your land has been well broken up for corn in the spring of the year, spread on it from thirty to sixty bushels of dry, slaked lime. If you are near enough to kilns to get the fine lime fresh drawn; and can get it on the land before it slakes, thirty bushels of that sort will be still better than the larger quantity slaked, but be very careful not to let your lime get wet before it is spread and harrowed in. If you are so remote from lime-kilns as to be able to haul only one load a day, it will be better to buy the fresh-burned and best lump-lime, because in that state it is much lighter, and when water-slaked, will increase from three to four-fold. Such lime ought to be put under cover, and slaked immediately with strong brine. Lime of the quality described, and treated accordingly, acts very promptly, mechanically as well as chemically; mechanically, in reducing stiff, rigid clay to a loose, friable texture; and chemically, by neutralizing acids unfriendly to vegetable production, and by combining with loose and light soils, they are rendered more adhesive and retentive of moisture; in other words, lime judiciously applied to stiff land renders it light, while it gives to lands too light a firmer or more compact texture. This dogma, paradoxical as it may appear to many, is fully established by every brick chimney or stone dwelling in the land. All who build such houses know that lime and sand, (the latter largely predominating in all light soils,) with water, are materials used by masons for the formation of mortar, which in a short time becomes as hard, if not harder, than the bricks. It is also well known that if stiff clay or rich mould were to be used with lime for mortar instead of sand, that when dry, it would moulder away and become impalpable dust. Now, with these plain truths before us, it is only necessary to apply smaller portions of lime to our lands, according to their texture, and we can have stiff or light land, as we may choose or will it.

Most writers on lime applied to agriculture, and many practical *liming* farmers, too, recommend doses of 50 or 100 per cent on the previous dressing. until you get up to 120 bushels per acre, at the end of the eighth year. I have not done so, nor do I consider it absolutely necessary or always expedient at such short intervals. Better extend the time, according to my cycle of six shifts, applying the lime to your corn-land in any convenient quantity, not less, however, than you commenced with, say 30, 40, up to 60 bushels per acre. Finally and emphatically, be it remembered that if your land is naturally deficient in lime, that deficiency must, in some way or other, be supplied, or you never can reap the full benefit of manuring your crops; particularly wheat will be uncertain in quality, as well as in quantity, without lime, however rich your land may be, and in time of drought your crops of all descriptions may fail entirely; whereas, on judiciously limed land, similar crops, under like circumstances, will escape almost unscathed.

APPENDIX.

Combination of concentrated manures to be applied by hand:

No. 1.

Soap-boilers' ashes,	2	bushels,	To be sown per acre on all meadows, or other grass-lands, in late autumn or early spring.
Plaster of Paris,	1	"	
Common salt,	1	"	

The proportion of ashes may be increased to any available quantity, as high as ten or twelve bushels, which is as much as can be conveniently sowed by hand.

When ten bushels of ashes are used, this is a fine dressing to be harrowed in with any fall or spring crop, or as a top-dressing for winter-grain; and by reducing the salt to one fourth of a bushel, and adding one bushel of lime, if your land had been previously limed, and allowing the mass, after being thoroughly incorporated, to remain one or more weeks in the heap, you will have a fine compost for corn-hills; a small handful to be dropped with corn, potatoes, and the like.

No. 2.

Super or bi-phosphate of lime,	100 lbs.
Plaster of Paris,	60 "
Common salt,	15 "

Thoroughly incorporated with two, three, four, or five times their bulk of any light, rich earth, or scrapings of the lanes and farm-yard after the rough manure has been removed, forms another excellent dressing to be harrowed in with any kind of grain. A small handful dropped in corn or potato-hills, and for early spring dressing of meadows, broadcast, will be found in many cases equal to 200 pounds of Peruvian guano.*

No. 3.

Chappell's Fertilizer, 600 pounds per acre, sowed broad-cast, and harrowed or shovelled in, I have found equal for the first, and far better in succeeding crops, than 300 pounds of Peruvian guano.†

No. 4.

Chappell's Fertilizer, 300 lbs.
Peruvian guano, 50 to 100 " } Better than 600 pounds Peruvian guano, to be harrowed or shovelled in, but never ploughed in deep.

Composts to be spread from the cart:

No. 5.

Wood-ashes,	100 bushels.
Plaster of Paris,	10 "
Fresh slaked lime,	10 "
Common salt,	10 "

From five to twenty-five bushels per acre. But never to be ploughed in, and, except on grass-land, not less than ten bushels per acre ought to be used.

No. 6.

Rough compost is readily made on a large scale, by strewing the valleys in your wood-land, where is generally a large deposit of leaves and other vegetable matter, with lime at any season of the year, and at all convenient times after one good rain has fallen. Scrape into winrows, and when you are ready for forming compost, heap alternate layers of this vegetable mould with the rough gatherings about the farm-yard, and with a moderate sprinkling of each layer or so with common salt, or strong brine, and a bushel of gypsum for each acre to which the compost is to be applied. This makes a good and durable dressing to be harrowed in with small grain, or to be sown on wheat during the winter, and immediately after clover-seed has been sown.

* Up to 1839 I had depended almost entirely upon the resources of the farm for manuring. With the exception of lime and plaster, my use of foreign or purchased manures had been confined to experiments upon the smallest scale.

† For two years I have used Chappell's Fertilizer without admixture—generally two barrels or 600 lbs. per acre. Last autumn I sowed the poorest part of a fresh field with one barrel or 300 lbs. per acre, shovelled in with wheat. The product was equal to 23 bushels per acre, and much the best where the Fertilizer was used. The weight per bushel, to say nothing of the increased quantity, was 64 against 61.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

REMEDY FOR THE CURCULIO.

MESSRS. EDITORS: How this pleasant announcement always gladdens the heart of the genuine lover of good fruit! No matter how often old remedies have played him false, if the new one appears plausible, new hopes are inspired, and he sees, or seems to see, delicious ripe plums, apricots, nectarines, etc., bending down the thousands and tens of thousands of branches heretofore doomed to barrenness by this universal bore, curculio. He sees, too, the mouths of rich and poor, great and small, abundantly supplied with the rare luxuries of horticulture, instead of the vile sweetmeats and confections which ruin so many pearly teeth and robust constitutions; and his own mouth fairly waters, as he joyously contemplates this better time a-coming. So, the new remedy is applied with unabated confidence of success. But, alas! for "the best-laid schemes of mice and men." The season passes, and his *golden hopes* with it. His trees again cast their untimely fruit, and *sugar*-plums are still the predominating luxury. There was "a screw loose somewhere" *this* time also, but *where* neither he nor the *great remedian* ever discovers, nor ever will, so long as their experiments are based on the erroneous suppositions that the curculio hibernates in the earth beneath the trees, itinerates but little, and crawls from the earth to the fruit in the spring to deposit its eggs. As to its powers of locomotion, no bird or house-fly is much more active than the curculio when its wings are once unfurled; and that it is borne by autumnal winds to a southern climate, and returned by the southern breezes of spring, appears less inconsistent to me than the prevailing notion that it spends some eight or ten months soaking and drying, freezing and thawing, in our northern earth, and then comes out bright in the spring. It was once as seriously believed that swallows dive into the beds of rivers at the approach of winter, and hibernate in the mud.

If curculio arise from a state of hibernation in the earth every spring, it might seem an easy thing, by spreading broad coverings, or other means, to detect some of them in doing so. I have tried it, and will give half my peach-crop, at least this year, to any one who will prove the catching of a curculio under these circumstances.

It is now June 17, and eggs which were deposited in plums the last of May are grown to grubs about one sixth of an inch in length. These larvæ having absorbed the life of the plum, it falls to the ground, where they enter some two or three inches, or less, change in about three weeks to curculio, and return to upper air—whether to deposit eggs the present season, or how to dispose of themselves the many months between now and winter, and especially *then*, is *the question*. Does *this second generation* lay eggs in other substance than fruit, which endure the winter and hatch out in the ensuing spring?

Place a dozen plums, more or less, as they fall from the tree, on a spot of light soil, and keep them covered securely some three weeks; you will find as many curculio, with a delicacy of structure hardly fitted for the hardships of an *earthy* hibernation. If you now continue the experiment, and cover them with dirt as solid as that through which they are supposed to work their way up in the spring, they die; or if you feed them with fruit, they will eat and do well till about October or November, and then die without reëntering.

the ground. Whoever will put an inch or two of moist sand into a tumbler or glass vase, and fill it with fruit containing the larvæ of these insects, may observe them through the whole of their wonderful process of transformation, and gain new ideas, more satisfactory and grateful to the taste of the true lover of nature, than even the most delicious "golden drops."

We err, most of all, in jumping at conclusions. Mr. Todd, for instance, covered the ground beneath one of his trees with hard-trodden dirt, which he thinks "delayed the resurrection of the curculio," and saved his plums. He therefore concludes "that the curculio itinerates but little, that it hibernates in the soil, under the branches of the trees on which it has flourished the preceding summer," etc. Now it unluckily happens that fruit-trees are as numerously visited by curculio the *first* year of their bearing, as they are any subsequent year, to say nothing of the fact that this insect can endure but a very short existence in the earth. I came to a similar conclusion as Mr. T. nearly ten years ago, by seeing the parts of a tree which leaned over a stream of water, weighed down with ripe plums, while every other branch was entirely barren. Subsequent observation and experiment have proved to my satisfaction, that these insects are guided by instinct to deposit their eggs where their larvæ may, by the laws of gravitation, reach such quality of earth as will favor their transformation. Hence it is, that intervening obstacles, as boards, pavements, hard-trodden earth, hogs, hens, chickens, etc., do a partial, temporary service; the curculio, seeing them beneath the tree, shuns it for one of *clearer prospect*.

There seems to be of late a fearful increase of insects noxious to the great interests of agriculture, caused by the wicked, wanton destruction of those natural guardians, insectivorous birds, which is so strangely, blindly allowed to exist almost everywhere about us. These truest friends of the farmer would fill his forests, fields, orchards, and gardens, and sport familiarly about his doors and windows, and afford ample protection to the productions of his soil, but for the reckless idlers who, in shape of worthless dogs, cats, and self-styled sportsmen, seem incapable of bearing the sight or sound of a quiet, harmless bird.

Crows, hawks, owls, black-birds, foxes, skunks, and weasels, naturally destroy a vast amount of noxious vermin-life, by nipping it in the bud, by seizing upon it at the starting-point, in early spring, as it comes out from a state of hibernation, and should be protected. Skunks, owls, etc., are especially valuable for clearing the farmer's grounds of those nocturnal insects which cut off his choicest productions while he regains his strength in sleep. It is a penny-wise and pound-foolish policy which weighs the occasional loss of an egg, chicken, or hill of corn, against the great amount of good which these natural guardians are ever doing. E. SANBORN.

Andover, Mass., June 17, 1854.

NEW KIND OF BOOTS AND SHOES.—Measures have been taken to secure a patent for a new kind of boots and shoes, invented by Albert L. Murdock, of Boston. The soles, and the lower portions of boots and shoes, are made of India rubber, or gutta percha, while the upper portion are formed of some textile fabric, such as woollen, cotton, etc. The lower portions of the boots and shoes protect the bottoms and sides of the feet from wet or moisture, while the upper portions form an elastic covering for the upper part of the feet or legs, and keep the lower portions properly adjusted to the feet, and at the same time allow the free perspiration to pass off.

THE PEAR BLIGHT.

BY A. H. ERNST, CINCINNATI, OHIO.

The following paper was communicated by Mr. Ernst to the Cincinnati Horticultural Society, and subsequently appeared in the *Horticultural Review:*

The cultivation of the pear tree is very simple; it readily adapts itself to any soil or location, so that it be not a swamp or marsh. A deep, rich, clayey loam, with a porous subsoil, and a full exposure to light and air, is the best for its full development. The tendency of the tree is to throw down strong tap-roots; it is, therefore, important to know something of the nourishment it will find to feed on there. This tendency is overcome by growing it on the quince, the natural disposition of which is to spread its roots, and luxuriate on the surface soil; though the tree is dwarfed, and the duration of its life shortened, still it is better for shallow soils, and gardens where not much room can be afforded. The fine sorts, with few exceptions, succeed well, and produce abundantly on the quince. These are usually trained in pyramid form, branching from the ground up, making a very handsome and attractive object in the border. When grafted or budded on their own stocks, they require more room, and are usually longer coming into bearing.

The cultivation of the tree has, however, its drawbacks. It is not hardy; or, if you do not like the term, it is subject to be cut off and destroyed by death at any time, when seeming in full vigor of health and growth. On the cause, there has been much speculation, without seeming to come to any satisfactory conclusion.

Long experience, observation, and much reflection, have established in my own mind the cause. I do not know that I can make this clear or satisfactory to you, and other minds, but I may open a door to a new, or rather an unexplored field for thought and reflection, both to the practical and the scientific investigator. Perhaps there is no spot in this, or any other country, where a greater opportunity has been afforded for an observance of the diseases to which the pear tree is subject—especially that form which we understand as *fire blight*—than here.

Scientific gentlemen, with some exceptions, have generally followed each other in attributing it mainly to INSECTS, and some to an *exhaustion*, or *absorption* of those *particles* from the *soil*, which are *essential* to the *health* and *life* of the *tree*, and the *perfect development* of its *fruit*, admitting, at the same *time*, the existence of other extraordinary causes for its disease and death.

Without denying that insects are sometimes injurious to the pear tree, even to its destruction, I must be permitted to question the general correctness of the theory, and also that of an exhausted soil. To my mind, facts do not warrant such conclusions as applicable to our region. To make out the latter theory, it should not be left to rest on doubtful speculation, but it should be shown to harmonize with matters of practical fact, as they continually occur. The ingenuous mind never should allow itself to lose sight of these.

Though, unquestionably, the working, or grafting on bad stocks, such as *suckers*, and planting in *bad soil*, will facilitate the destruction of the pear tree—as the same cause would any other—they are only *local*, and *lay* not at the *root* of the *evil*. To suppose the adventitious existence of some sub-

stance in the soil, to remove difficulties out of the way of a favorite theory, is not satisfactory.

It has been advanced that the cracking of the *White Doyenne* is owing to an exhaustion from the soil of those particles necessary to its perfect development; that the tree would resume its former habit of the production of perfect fruit, if these substances were supplied to the roots. Among many reasons for dissenting from this position, let me say, that for eight or ten years, I have hardly had a perfect fruit on trees of this variety, many of which formerly bore fine fruit until last summer, when, on all of them, it was as fine as I ever saw it anywhere; and this without any application whatever to their roots. The trees are scattered over my grounds; some in grass, the sod of which has not been disturbed for years. I attributed this remarkable effect to atmospheric influences, with which the composition of the soil had nothing to do. It was, during the growth of the fruit, unusually dry for our climate.

Let us now examine the analysis of the pear tree, as a correct and reliable basis to overcome the malady to which the tree is subject. Loudon, and other eminent writers on the subject, would have us to understand that there is a strong analogy in the life principle of plants and animals. It is, therefore, fairly inferable that, as animals of the same species do not wholly depend on one class of food for life and health, but that, to a certain extent, choice is left to select from, producing the same results, that this is equally applicable to plants. When we, therefore, have the analysis of Prof. Emmons before us, showing that the ash of the sap-wood of the pear tree contains more than twenty-seven per cent of phosphate of lime, twenty-two of potash, and a number of other inorganic elements, though perfectly correct, are we sure that a tree grown in a different soil will not produce different results? I shall show that this is the case in other species of trees, and therefore infer it is so with the pear. It is very certain that the color of fruits is affected by substances in the soil and taken up by the roots, not essential or detrimental to the health of the tree.

Liebig, in speaking of the inorganic constituents of plants, says: "Many of the inorganic constituents vary according to the soil in which the plant grows," etc. Again: "Most plants—perhaps all of them—contain organic acids of very different composition and properties, all of which are in combination with bases, such as potash, soda, lime, or magnesia," etc.; and after proceeding to show that certain acids are always, of necessity, present in plants, he proceeds: "It is equally certain that some alkaline base is also indispensable in order to enter into combination with the acids." And, while he seems to make it clear that the life and health of the plant depend invariably on certain acids, he says: "It will be necessary to bear in mind that any one of the alkaline bases may be substituted for another, the action of all being the same." His object is, if I understand him, to prove that certain acids are, in the first place, essential to the existence of the plant, and that this always attracts a given quantity of alkaline; that these alkalines are not necessarily the same, but similar in action; that the plant will take them up as they are found in the soil. To prove this, he says: "It has been distinctly shown, by the analysis of De Saussure and Berthier, that the nature of a soil exercises a decided influence on the quantity of the different metallic oxydes contained in the plants which grew on it; that magnesia, for example, was contained in the ash of a pine tree grown at Mont Brever, while it was absent from the ash of a tree of the same species from Mont La Salle; and that the proportions of lime and potash were also very different." Again

he adds: "Let us now compare Berthier's analysis of the ash of two fir trees, one of which grew in Norway, and the other in Allerard, (departemen de l'Isere.) One contained fifty, the other twenty-five per cent. of soluble salts. A greater difference in the proportion of the alkaline bases could scarcely exist between two totally different plants."

Though it seems in all cases the oxygen was found nearly in the same quantities in each species, proving conclusively that while certain properties, such as some of the acids and oxygen, are always present in nearly uniform proportions, that it is not so with other substances; that they not only vary largely in quantity, but in some instances are altogether absent; that a tree, like an animal, has some latitude of choice in its food; and that the elements of the air are essential to the existence of both. This is perfectly in harmony with every day's experience of the different and diverse soils we find the tree to grow and flourish in. It may be questioned, if a tree, which finds the proper constituent particles in a soil for its healthy growth, can ever exhaust any part of it to such an extent as to produce death, if the natural sources of growth continue to yield their supply from the atmosphere. A forest does not wear out the soil and die; on the contrary, we are indebted to its agency for the virgin soil we find under its boughs. It is the opinion of writers of high authority, that among our modern forest trees, there are some which have attained the great age of four thousand years; and it is said that "investigation of coal and lignite strata has proved the existence of trees of the same order as those now existing." If this be true, it proves positively that trees do not draw on the soil, so as to destroy themselves, or to impair the perfect development of their seed and fruit. But it may be said this is applicable to a state of nature. Well, this is just what I am endeavoring to show; that we have run contrary to this; and, from that cause, have produced an enfeebled race, which we are exposing to an uncongenial climate, and charging it (improperly, as I think) to the soil.

The reason why soils are worn out, is because of injudicious cultivation, a continued removal of its products without a proper restoration of the properties thus removed. This is not applicable to trees, only so far as the removal of fruit is concerned, and the obstruction of the natural supply from decayed leaves, branches, etc. This may be larger or smaller, and of course it is wise to see that the soil is well supplied with all the particles thus drawn from it. You may, however, feed the pear tree as much as you please, and still it will die in the midst of a luxuriant growth; and it is, therefore, to other causes that we must look for its destruction, not to the want of proper food.

The advocates of the insect theory have not been very successful in proving its truth. They are bound to show something more plausible for its support than the simple fact that insects are found in connection with the diseased parts. They are bound to show that these insects are really the cause, and not there as a result of the blight. And, moreover, to show some reason why it is that they *discriminate*, pass by certain unmolested pear trees, and do not make a clean sweep of all within their reach; and also, why it is that their destructive influence is sometimes suspended for years together.

Prof. Harris' description of the *Scolytus pyri*, in his invaluable work on Insects, which is mainly relied on as the support of this theory, fully defines its regular periods of change and operations. I am very sure that it will not apply to our blight, all the reasons for which I can not here enumerate. Suffice it to say, that the injury of that insect "*ends* with the death of the *branch* down to a certain *point*, but does not extend below the seat of attack, and does not affect the health of other parts of the tree." (Second edition *Har-*

ris' Treatise on Insects.) A comparatively harmless insect, whose effects all cultivators in this region will have observed on their trees.

I will here very briefly give what I deem the cause and the reason for the blight, which are not materially different from those given elsewhere. Long observation has confirmed my judgment that the disease is chargeable mainly to atmospheric influences. The Great Creator has in his wisdom so ordered it, that the vegetation, soil, and climate of every part of the globe act in perfect harmony for the best development of the former. A departure from this state of nature is at the hazard of the health and longevity of the plant or tree, though this result does not invariably follow. The pear tree, as before observed, is not a native of this continent, but of a different hemisphere, where it grows to large size and great age, as other forest trees do. All intelligent writers, so far as I know, are agreed that the improvement of the fruit has generally been at the expense of the hardiness and durability of the tree, (not a necessary consequence.) However, we find it so. We have imported an enfeebled race, and are exposing it to a new climate, the vicissitudes of which it is not fully capable of resisting. I care not for terms: whether you call it *frozen sap blight*, or *sun blight;* whether the effect is produced by sudden and rapid changes of winter temperature, or an excessive summer sun. In either case, it is the destruction of the natural functions of the tree, producing disease and death. The former is often tardy in its work, but the latter generally rapid and instantaneous. In the one case, it is brought to bear on the tree in a state of rest, when the sap-vessels are contracted, when their juices have been expended to form wood, which is immaturely ripened. In the other case, when the sap-vessels are extended to their utmost capacity, to supply the demands of a rapid and luxuriant growth; when this growth is in its most tender and delicate condition, the scorching mid-day sun does the mischief; the sap, by its rays, is scalded and vitiated, a chemical process of decomposition takes place, its poison is soon carried to and mixed with other portions of the tree, and the whole is often irretrievably lost in a few hours. The only remedy is, the moment that it is discovered on the limb, where this form of blight always makes its appearance, to lop off until you come to the sound and healthy wood, and thus prevent its spreading. Do not stop to hunt insects until you have performed this work, when you can do so leisurely.

Sun blight, or *fire blight*, is always most prevalent in a wet and hot summer. There has been but little the last three years, and we shall certainly have no frozen sap blight to complain of next summer. This is to be attributed to rather unusual dry summers during this period; the wood having ripened well before winter set in, and the growth not so luxuriant as in wet seasons.

As a remedy, or rather a preventive to the frozen sap blight, I would suggest the shortening-in application, in September or October, to check the growth, and induce the maturing of the wood. This system is, perhaps, only applicable to dwarfs, as standards can not well be reached. What is understood by shortening-in, is to cut back the present year's new shoots to the firm wood, say one third, or one half of it, as the case may require, so that the sap remaining shall be expended in perfecting the wood which is left, and not to be stimulated by the leaves on the ends of the shoots to continue growth. This system is also practised to force the tree into forming fruit-spurs, and thus facilitate the production of fruit. Care must be observed in the time of performing this operation. It must not be so early in the season as to cause the bursting of the lateral buds, and thereby cause a more inju-

rious growth than it is attempted to check. There need be very little risk in this; we must be governed by the state of the season. It is better a little late than too early; when the majority of the leaves on the shoot are rigid and hard, is a suitable indication of the proper time.

Having said so much about the want of hardiness of the tree, it may be asked, how I account for the trees that are to be found up and down our land, which have withstood the winter's storms and summer's heat from one to two hundred years? Before I answer the question, allow me to offer them as standing monuments against the exhaustion and insect theories. We have had some specimens in this vicinity—until the spirit of city improvements required their room, when the rude hand of the woodman brought them low—whose existence was coëqual with the first impress of civilization; they remained sound, healthy, and fruitful to the last. Such specimens, it will be found, have all originated from seed, and always from a hardier stock than the varieties of more modern introduction. A friend has just given me the history of one in Guilford, Conn., which he says is over two hundred years old, measuring fifteen feet in circumference at five or six feet from the ground. It is now beginning to decay, but yields a considerable quantity of fruit. He says the fruit does not compare with the best now in cultivation, but when he was a boy, more than fifty years ago, it was considered very superior.

It is to these hardy remains of ancient days we must look for constitutions to hybridize with our finer sorts, say, if you please, the *Seckel*, which is as hardy as any of them, for a class of trees producing superior fruit, and, at the same time, such as we can trust out of doors.

I fear the above remarks may seem lengthy to some, but the subject is of too much interest to be passed over lightly, or with mere assertions. As it is investigated, the more fully its importance is brought to view. I have endeavored to avoid all improper allusions, unnecessary repetitions, and aim at display, simply confining myself to a plain statement of theories and opinions of others, their comparisons and plausibilities. Much might be added to sustain the views I have presented as the real cause of destruction of our pear trees.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

PRESERVATION OF WHEAT IN TENNESSEE.

Messrs. Editors: I am aware that very many of my farming friends in Tennessee are the readers of your valuable publication, and are heavy wheat-growers, and now that recent railroad conveyance, with the foreign demand, has permanently settled upon this valuable grain a fair price here, it is not at all unlikely that much more attention will be paid to the growing of wheat in future. A few otherwise systematic and economical farmers in Tennessee raise a pretty fair crop of wheat, and have no barns to house it in. This is a very great desideratum to a wheat-grower, and the want of good barns, with some other proximate causes of mismanagement, sometimes results in material damage to the wheat of these farmers before it reaches the miller's hopper. Therefore, through you, to my farming friends in Tennessee, let me, without ostentation, give my experience in harvesting and saving a wheat crop, referring, at the same time, to my acquaintances for the character of my wheat crops:

Whenever the straw of the wheat becomes of a golden yellow, for about two inches below the ear or head, disregarding any other feature in the straw or grain, I cut it down, bind it right up after the scythe, in small binds, shock likewise in small shocks. I let it stand thus in the field till it cures and dries perfectly, so that the grain would grind, and *no longer*. I haul to the barn thresh out when convenient, unless I notice a sign of weevil breeding in the wheat, when I thresh at once; and having a large bin for the purpose in the barn, I crib it up in the chaff till it is needed. In this way I have saved and do save one thousand bushels of wheat clear from mould, heat, or must The bran is always thin and tough, the flour white and sweet, preserving its native fermenting qualities to the satisfaction of the most fastidious epicure in any clime. This process is easy, simple, and safe, and it may be that most of my brother farmers knew before what I have here told them was my way, and the proper way; but do they, to the letter, pursue it? That is the question; but the whole science of philosophy, according to *Epictetus* (a famous stoic philosopher, highly esteemed in his day,) consists in two words, *bear* and *forbear;* to the latter your humble correspondent now will adhere.

As ever yours, A. L. B.

Mill Bend, Tenn., June, 1854.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

PLANTING IN MISSISSIPPI.

Messrs. Editors: Having sowed our oats, our attention is called to clearing land if necessary, or our branches, if they have been neglected in the summer, which is the right time for this work. When this work is done while the growth is not in foliage, there is much less difficulty in burning off. Beside, a great many more stumps die. Willows, which are a great nuisance in creeks, in most cases, after being cut down, will put out. The most successful plan which I have tried, in securing their destruction, is, whenever they shoot out suckers, to break them out immediately, which can be easily done when taken in time. But, if allowed to grow five or six months, they have to be broken out by the pole of an axe, and not cut down. By repeating this process a couple of years, I can destroy most of them. The old logs on land that has been idle two or three years, are about this time cut up, turned by oxen, rolled and burnt, if the weather admits. We bed up this kind of land in January, expecting to have some freezes that will mellow it. Having finished clearing new ground and branches, we have all our logs to dispose of as soon as we can, using the small branches, etc., to assist in consuming them. Our cotton-stalks, if small, we beat down; if large, we pull up and burn. Having made ready a considerable portion of our land intended for cotton, if we have suitable weather we now burn off new ground or branches. But when this work has been done in the winter, we delay as long as possible, that the wood may in some degree season. By the 1st of February, we endeavor to get to steady ploughing. Our fallow-land calls on us for double ploughs, and land that is bedded out must be cut to pieces by a sword-harrow just before planting. Our other cotton-land is two-furrowed by a single horse-plough, except we wish to change our rows, then it is three-furrowed. When there are two furrows, they are made to meet in the water-furrow.

Considerable difference of opinion exists as to the advantages of a centre-furrow for cotton. It is maintained, that by a centre-furrow the tap-root is enabled to penetrate deeper—that by it, in a dry year, the plant can resist drought better, and that by exposing the soil beneath, where the cotton is to grow, the atmosphere can act on it, producing very important changes. On the other hand, it is contended that the tap-root must reach the hard ground before the plant will do much toward maturity, that the deep furrow delays this period, and that, in a wet season, it invites too much moisture beneath the plant. Good planters advocate both systems, appearing to succeed equally in making good crops by either plan. My practice is, to avail myself of both, as it may suit my convenience. I think agricultural writers are two indiscriminate in advocating deep ploughing. The depth of the ploughing should be governed by the condition of the soil. Ploughing eight or ten inches in a soil ten inches deep, would of course be attended with great advantage; whilst the same ploughing in one of four inches might prove an absolute disadvantage. The reason is obvious. In the latter, we are mixing four inches or more of clay with the same amount of soil, which, in the given space, presents only half of the fertilizing elements, and of course forces the fibrous roots to travel twice the distance for the same amount of nourishment. But if we turn up four inches, and sub-soil six, then we are offering materials in their concentrated form, at the same time we are placing our corn over a mellow mass, to absorb moisture when in excess, and to give it out to the plant in a dry time. To preserve our lands in good condition, we are compelled to level or circle them, and to further protect them by hill-side ditches. Those wishing information on this subject would do well to give an article, by a Planter, in the April number of *The Plough, the Loom, and the Anvil*, of the present year, an attentive perusal. The system described there is excellent for land which has few stumps and washes. But I would advise bringing them as near a level as possible, having the ditches determined by the ground. Having two-furrowed our cotton-land, our attention is next called to our corn. Here there is considerable difference in the mode of preparation. Some run a deep centre-furrow with a bull-tongue plough, to be bedded on by a two-horse plough. The objection to this course is, there is great danger of placing the corn too high for the last working. Others tap two furrows, as for cotton, break out, and when ready to plant, throw back four furrows. This obviates the objection to the first mode, but it has a difficulty. In planting, the land is brought too near a level, and should we have some of those washing rains, that in the spring are frequent, the water sweeps across the rows, bearing off the soil, and filling up the hill-side ditches, unless they have great descent. The plan I have adopted appears the least objectionable. I use a large 14-inch scooter or bull-tongue, attach two horses to it, and run three furrows as deep as I can in the water-furrow of the old row. A week before planting, I commence throwing out the balance of the row, which is a species of sub-soiling. My corn is not placed too high, and I have fresh land to plant with.

I must close, for fear you will think I am appropriating too much of your journal to my use. Yours, etc., H. W. STACKHOUSE.

Hinds Co., Miss., July 1, 1854.

SPONGE-FISHING is said to have become a very profitable business in the neighborhood of Key-West. One hundred thousand pounds are reported to have been gathered during last year, and the sales amounted to $25,000. The article is mostly procured by natives of the Bahamas.

GREAT MECHANICAL FEAT

We received an invitation a few days since, to attend a collation, to be served up in a gigantic iron-casting at the establishment of Messrs. Mott & Ayres, on the North River, foot of Twenty-sixth street.

We accordingly took stage, and on arriving at the office of the gentlemanly artists, found quite a number of the craft assembled, and at the time appointed we were taken through the work-shops, and, by request, descended a ladder into a huge CAST-IRON GAS-METRE! The metre, one half of it, was standing on its end, inclosing us, of course, on all sides, by a circular iron wall. A table was appropriately spread with plates and viands for forty people. About thirty were present, at the first table, though the whole number (40) were afterward accommodated at a second dinner.

The dimensions of this, "the largest casting ever made," are as follows:

Internal diameter, - - - - - - -	15 feet.
Depth, - - - - - - - - -	6 ft. 3 in.
Average weight of each casting, - - -	16,000 lbs.
Thickness of casting, ONLY ONE INCH.	

Four such cylinders were cast in succession, without the loss of a single heat; and these four castings, when united together, form a complete metre.

This is said to be the largest casting ever made in any country. But the chief wonder is that castings of that large size, *so very thin*, could be made, without loss of one or more trials. Had the thickness been several inches, imperfections might exist and still be invisible, being covered. But with so thin a plate, any unequal cooling of the metal would most certainly spoil the work.

This casting is designed for a stationary metre for the Manhattan Gas-Light Company, and is to be placed near Fourteenth street, on the East River. It is designed for the purpose of measuring the gas which passes out of the gasometer. The quantity manufactured may thus be compared with the quantities indicated by the totals of the several metres where the gas is delivered, and losses by leakage or otherwise may be determined. These losses, we understand, are believed to amount to 20 or 25 per cent.

This is not the first feat of this kind accomplished by this enterprising firm. In 1851, at the order of the same Gas Company, they cast twelve pillars, each 50 feet 8 inches in length, 3 feet diameter at base, and 2½ feet diameter at top, with an average weight of 27,250 lbs. each, and the whole work was accomplished without the loss of a single casting.

These pillars, it is stated, are 10 feet 8 inches longer than any pillars ever cast in Europe. They are to be seen around the huge gasometer of the Gas Company, on the Tenth avenue.

Girders of open-work, twelve in number, and each 40 feet long, and weighing 10,000 lbs. each, were also cast at the same time, as supports or bands to hold the pillars and other frame-work in their places.

The guests were exceedingly gratified at this proof of skill in the operatives, and of enterprise and efficiency in the gentlemen of the firm.

It will not be inappropriate to annex to this statement a paragraph which we find "in the papers," as follows:

"A NOVEL DINING-ROOM.—The *New-York Commercial* gives an account of a dinner-party given by Messrs. Stillman & Allen, Iron-Workers, New-

York, in the cylinder recently cast for the "Metropolis," the new steamer in process of building for the Fall-River line. Twenty-two persons sat down to dinner in the tube, and after dinner the guests were amused with a drive in a buggy through their dining-room. It was found that more than one hundred persons could stand in the cylinder. It is nearly nine feet in diameter, and has twelve feet stroke of piston. It is the largest, by more than one third, ever cast in this country; and it is said that its immense size will give great power with steam of low pressure, thereby promoting the safety and durability of the engine and boilers, and economy in producing an equal amount of power with less consumption of coal."

It should be noticed, in justice to all parties, that in the casting at the Novelty Works, the guests were seated lengthwise of the cylinder. In that which we have first described, the cylinder stood endwise.

Each one of these firms is an honor to the country. What they can not accomplish, may perhaps be set down as an actual and essential impossibility.

HOW STATUES ARE MADE.

The following letter, in the *Literary World*, from George H. Calvert, describes the *process of sculpture*, and contains information that will undoubtedly be highly interesting to a large portion of our readers. It contains also some most admirable remarks upon the "*Greek Slave*," by Powers, which still further commend it to notice:

"Process of Sculpture.—*The Greek Slave.*—This statue having, on its first presentation to the American public, excited unbounded admiration and enthusiasm, a brief account of it will be interesting to its author's fellow-countrymen.

The Greek Slave is the second ideal work of the American sculptor, Hiram Powers—the Eve being his first. The clay model was begun and finished in the summer and autumn of 1842. American sculptors having been hitherto obliged to work abroad, but few of our citizens have had opportunities of witnessing the labors of the studio; acceptable, therefore, will be some explanation of the several processes through which a work in sculpture must pass, ere the artist can present his conception smoothly embodied in marble. The visitors to the 'Slave' will thus be made acquainted with the bodily birth and growth of the wonderful creation that stands before them in dazzling beauty.

The conception being matured in the artist's mind, the first step in the process of giving form to it, is to erect, on a firm pedestal, a skeleton of iron, whose height, breadth, and limbs are determined by the size and shape of the proposed statue. In this case it would be above five feet high, with branches, first at the shoulders, running down forward for the arms, then at the hips, to support the large mass of clay in the trunk, and thence divided in two for the legs. About this strong simple frame is now roughly built, with wet clay, the pre-determined image. Rapidly is this moulded into an approximation to the human form; and when the trunk, head, and limbs have been definitely shaped, then begins the close labor of the mind. The living models are summoned, and by their aid the surface is wrought to its last stage of finish. I say models, for to achieve adequately a high ideal, several are needed. Na-

ture rarely centres in one individual all her gifts of corporeal beauty. For the Eve, Powers had more than a score of models. The modern Christian artist can not be favored as was the painter Zeuxis of old, to whom a Grecian city that had ordered from him a picture of Helen, sent a number of its choicest maidens, that out of their various graces and beauties he might, as it were, extract one matchless form. For the 'Slave,' the character Powers had established in Florence for purity and uprightness, obtained for him one model (who is not a professional sitter) of such perfection of form as to furnish all he could derive from a model. With this breathing figure before him, and through his precise knowledge of the form and expression of every part of the human body, obtained from the study of nature and his own deep artistic intuitions, the clay under his hand gradually grew into life, as it assumed the elastic, vital look, which no mere anatomical knowledge or craft can give, by which is imparted, by the genial sympathy with nature's living forms in alliance with a warm sensibility to the beautiful, qualities which crown and render effectual the other less elevated endowments for art. Thus, by the most minute manual labor, directed by those high and refined mental gifts, the clay model of the 'Slave' was wrought out; and here the artist's work ended; the creation was complete. The processes whereby it was now to be transferred to marble, though of a delicate, difficult kind, and requiring labor and time, are purely mechanical, and are performed, under the artist's direction, by uninspired hands.

In order that the soft clay image be transformed into a harder substance without suffering the slightest change in its surface, a mould is applied to it, in the same way and with the same material as when a cast is taken of the living face or head, by means of semi-liquid plaster of Paris. The clay figure is entirely covered with this substance from one to two or more inches thick, provision being made for taking off the arms and for splitting the trunk after the plaster shall have hardened. The clay is then all taken out, the hollow mould is cleaned, and then refilled with semi-liquid plaster of Paris. When this, which now occupies entirely and minutely the place of the clay, has in its turn become hardened, the outside crust of plaster is broken from it, and then is laid bare an exact fac simile of the original clay figure in hard, smooth plaster of Paris, capable of bearing the usage of the studio, and of receiving the many marks that are to guide the marble-cutters, whose work now begins.

First comes the blocker-out, with his heavy mallet and coarse chisel, under whose rough blows the white block soon begins to grow into a rude likeness of humanity. Then a finer workman, who loosens more of the folds that overlay the beaming image that the artist is bent on disclosing from the centre of the marble. And, finally, the artist himself, or, as in this case, a refined worker, schooled under the eye of Powers, gives the finishing touches, reproducing, with unsurpassed accuracy, in the transparent, pure marble, every swell and indentation, and minutest curve, all the countless delicacies of detail, the which, combined with and forming grand sweeping lines, characterize the original as moulded in clay by the hand of Powers.

And now, in the midst of us, here is the marvellous work, drawing from our hearts a flood of vivifying, purifying emotion; a revelation made by its author to his countrymen of the power and majesty of art. They who have looked in silent delight on the Venus of the tribune in Florence, no longer enjoy a unique privilege. On our native shore, sprung from the warm bosom of native strength, a fresh emanation from the exhaustless soul of beauty, stands a work as resplendent with the impress of genius as the famed Grecian goddess, as sublimely simple, as vividly graceful, and more

touching in its moral appeal. The stronger the genius the simpler the elements wherewith it delights to work. How simple, how common are those by which such overpowering efforts are wrought: a young maiden in a condition of painful constraint. But the two great sources of human interest—the human body, and, shining through it, the human soul—are here. The artist had the creative vigor to reproduce, in its indescribable symmetry, its matchless grace, its infinite beauty, that chief marble of the earth, the human body, making transparent through these attributes deep inward power and emotion; and it is because he has had this inspired mastery, that, standing before his work, the beholder is not only spell-bound with beauty, but awed by a solemn, ineffable feeling, and mysteriously drawn closer into the chastening presence of God."

AMOSKEAG MACHINE-SHOP.

THE machine-shop of the Amoskeag Company, unpretending in appearance, and entirely out of sight of all passers-by, has ever been an establishment of importance, using immense quantities of raw material, turning off a great amount of machinery, and giving employment to a large number of workmen; and now, under the judicious management of O. W. Bailey, Esq., its agent, it has not only become a most important part of the Amoskeag Company's establishment, but has gained a world-wide reputation for the excellence of its machinery.

The first machine-shop, known as the Old Machine-Shop, was built in 1840, upon a section of the lower canal, which canal, since completed, is a continuation of the famous Blodget Canal, into which the water of the upper canal passes, and from which the water is discharged into the Merrimac, through a weir, of permanent stone-masonry, below Granite street, a distance of 7250 feet, from whence the water enters the canal from the basin. This shop is 260 feet in length, 36 feet in width, and three stories high. In 1842, the company erected an extensive foundry, before this having obtained their castings at Chelmsford. This shop answered all the purposes of the company until 1848, when they built another machine-shop and foundry, now known as the New Machine-Shop and New Foundry. This machine-shop is 260 feet in length, 40 feet in width, and three stories in height; and the foundry is 120 feet in length, 80 feet in width, and one story in height. At this time, the company commenced the manufacture of locomotives, and the experiment succeeding beyond expectation, they have from time to time extended their works; adding a boiler-shop in 1852, 200 feet in length and 40 feet in width; a tank-shop, 200 feet in length and 25 feet in width; a forge-shop, 200 feet in length and 36 feet in width; a paint-shop, 84 feet in length and 40 feet in width—all one story in height; a fire-proof pattern-house, 100 feet in length, 30 feet in width, and three stories in height; and a store-house and setting-up-shop, 250 feet in length, 40 feet in width, a part two stories in height, and a part one story in height.

The first locomotive, the Etna, was built in 1849, for the Northern Road, since which time the business has so increased, that they now build sixty a year, turning out more than one a week.

THE INVENTOR OF RAILROADS.

We hear the question asked, who was the inventor of the railway? and have never heard it satisfactorily answered; and we believe there are very few persons in this country who know any thing on the subject. Some few years ago, Howitt, of the *People's Journal*, gave a somewhat lengthy sketch of the alleged inventor, who, up to May, 1836, had been neglected in England. While thousands had been enriched by his brilliant scheme, he had remained forgotten—forced by poverty to sell glass on commission for a living. How many of the railway projectors, agitators, stockholders, etc., have heard of the subject of these remarks?

"About half a century ago—the exact year is not known—there was born in Leeds, Eng., a man named Thomas Gray. Scarcely any thing is known of his early history. He was, we believe, a poor collier; and being very ingenious, he conceived the idea of facilitating the transportation of coal from the middle-town colliery of Leeds, a distance of three miles, by means of a sort of railway which he constructed of wood. Upon this his cars moved at the rate of three and a half miles an hour, to the great merriment of a wise and discriminating public, who laughed at the idea of a railway as something very visionary, and as the mere suggestion of laziness. Poor Gray thought otherwise. Magnificent visions of future railways, such as are now stupendous realities, loomed up before him, and he began to talk in public of a general system of iron railroads. He was, of course, laughed at, and declared a visionary, moon-struck fool. But the more Gray contemplated his little railway for coal, the more firmly did he believe in the practicability and immense usefulness of his scheme. He saw in it all that is now realized, and he resolved, in spite of the ridicule, the sneers, and rebuffs that were heaped upon him, to prosecute his undertaking. He petitioned the British Parliament, and sought interviews with all the great men of the kingdom; but all this had no effect except to bring down upon him, wherever he went, the loud sneers and ridicule of all classes. Still he persevered, and at length engaged the attention of men of intelligence and influence, who finally embraced his views, urged his plans, and the result is now before the world. Thomas Gray, the inventor of railroads, who, no longer ago than 1820, was laughed at for ever mentioning the idea, still lives in Exeter, England, in the full realization of his grand and noble railroad schemes, for which he was declared insane. How much has the world been benefited by his insanity!"

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

SECURITY ON RAILROADS.

Messrs. Editors: In the June number of *The Plough, the Loom, and the Anvil*, I noticed a brief statement of an invention for the purpose of guarding against accidents to railroad trains. It is in some respects similar to one which I discovered some months since, except that I do not use the battery or electricity in any way. My invention is arranged and operated by the locomotive upon mechanical principles. Having applied for a patent on the same, I will send you a brief statement thereof:

A medium of fine twisted wire, or any other suitable material, is placed along the track, under ground, having a toothed-wheel attached, which is divided into two to four sections. The road is to be divided into sections or stations of ten to twenty miles, which may be in their turn subdivided into sections of one mile. At each station a sentinel-post is set, containing a rod with a large pointer working up and down in front of a scale on the outside of the posts. These posts may be made to present four such scales, two of which will be in a position lengthwise, and two in a crosswise to the road. A brilliant light may likewise be used at night, instead of the pointer, which can be seen at a great distance. The section-wheel is provided with teeth like those of a saw, and are set off to correspond in number to the marks upon the scale, being cut so as to only allow the section-wheel to revolve one way; and as one specified portion of the road is travelled by the train, it instantly re-sets itself for another.

A strong semi-circular lever is likewise fastened to the track, at a little distance from these posts, having one end connected to the medium, and which is gradually pressed down by means of an arm and pully extending from the side of the engine-car, by means of which the mediums are drawn either way, both behind and before the train, moving the whole connection of devices, and thus showing the position and motion of the cars by day or by night; so that any engine-driver or conductor, before starting for a depot, can always know whether another train is on the section before him; and hence accidents by collision will be only the result of the most stupid carelessness.

The agent or superintendent of the road may also have a small wire extending from the road to his office, affixed to a dial or index scale, showing there the operations of the train from day to day. Persons at draw-bridges, cross-roads, or any other point of extreme danger, can tell whether the train is near or not, thereby preventing, in many instances, the great destruction of life and property which has become so frequent and alarming upon the best conducted railroads.

Any further information respecting the above invention can be had by addressing the inventor, H. B. LAWTON.

Eagle-Mill, Rensselaer County, N. Y.

IRON HOUSES.

WE attended last evening, an informal meeting of business men, at the auction rooms of M. N. Croft, Court street, Brooklyn, at which Mr. Sexton, the inventor of a new plan of iron buildings, explained his system. He constructs the frame-work of his buildings entirely of cast-iron, in sections, which are made to interlock by very close-fitting and ingenious joints, secured by keys. This method of building avoids the labor of drilling and bolting, which has been a great inconvenience of iron buildings. It also allows the house to be taken down in sections, and removed at very little expense. The frame-work he covers on the outside with plates of iron, by a system of interlocking, without any bolts or other fastenings, the joints being packed with gutta percha, so as to exclude water under hydraulic pressure. To finish the dove-tailing of the joints, he has invented a machine that can perform the work of forty men. The walls are made hollow, and the inclosed space is filled in with a non-conducting composition of beach-sand and other substances, so

that, as Mr. S. observed, his house, when finished, becomes throughout a perfect fire-proof safe. The roofs and floors are made of cast-iron frames, resembling heavy window-sashes, the interstices being occupied, as in the case of windows, with plates of glass, of any required thickness and transparency. The glass used is not our common glass, but it is itself a new invention, being called malleable glass, from its wonderful property of toughness, allowing it to bend freely without breaking. It can be drawn out into threads of any fineness, and so strong and flexible that they are said to be commencing the manufacture of piano and violin strings from this material. Mr. S. handed round a piece of this glass-string for inspection. It was as small as the E-string of the violin, and could be bent around the finger, or tied in a knot, apparently like catgut.

Plates of this glass being let into the frame-work of the floors, the whole is then covered over with a peculiar transparent cement of Mr. S.'s invention, which makes the whole floor look like one solid plate of glass. The cost of roofing with this material is 75 cents per square foot. The walls inside can be covered with plaster, or finished with iron or glass, at the option of the builder. All the interior ornamentation may be of malleable glass.

The advantages claimed for this style of building are, first, its great cheapness, and the rapidity which it allows in construction. It effects a saving of one third in cost, and three fourths in labor, over every other method. Mr. S. stated that he could complete an ordinary dwelling-house in forty days. Second, the variety of style and finish that can be obtained at small cost by different combinations of the same patterns. The inventor remarked that in the construction of the whole Crystal Palace but six different patterns of castings were required. Third, the facility with which such a building can be taken down and removed. Fourth, its security from damage by fire or lightning—thus saving all the expenses of insurance. Other incidental advantages are its durability, freedom from vermin, etc.

It is proposed to form a company for the manufacture of these houses, with a capital of $150,000.—*N. Y. Leader.*

SHOE BUSINESS.

The following statements illustrate the benefit of a variety of pursuits, and especially of mechanic trades:

A Busy and Growing Place.—The population of Milford, Mass., at present exceeds 7000. The number of buildings erected last year was 78, valued at $173,200. The number of boot-manufactories is 40, which turn out 1,450,198 pairs. Their value in 1853 was $2,594,346. Number of firms engaged in mercantile business last year, 46, the amount of whose business was $1,050,800. Amount of woollen manufactures, etc., $285,000. Total business, $4,103,346.

The Legislature has just passed a bill to establish a police-court in Milford, and the Judge's salary is to be $300—not a very tempting inducement; yet it is said there are several anxious competitors for the appointment.

The Shoe-Business in Haverhill, Mass.—The *Haverhill Banner* says there are more than two hundred different kinds of shoes manufactured in that town, from the brogan to the finest kinds of ladies' shoes, the sales some

days amounting to from seventy to eighty thousand dollars. It is estimated that there are at least five million pairs manufactured annually, the shoe-business of the place being only second to that of Lynn, the great shoe-mart of the country.

It is stated, also, that Massachusetts manufactures annually two pair of shoes for every man woman, and child in the United States.

SCULPTURE AND SCULPTORS.

The age in which lived the great men we have already described was wonderfully fruitful of those whose renown in this great art has come down to our times, and whose works confirm the truth of their biographers.

Piero da Vinci was the nephew of Leonardo, and from early boyhood gave proof of remarkable genius. He commenced with painting, but afterward abandoned that beautiful art for what he regarded as better suited to his genius, and he was placed under the care of Nicolo, who was surnamed Il Tribolo. Piero began immediately to design, and soon outstripped his companions. A block of marble being given to him to carve from it a boy, as an ornament for a fountain, he proved himself equal to the higher styles of the art. All his works, even then, discovered wonderful lightness and grace. Among others which excited astonishment, was a Christ fastened to the cross, which was executed before he had attained his eighteenth year.

After this, he went to Rome, for the purpose of studying the works of Michael Angelo. But he died ere he had entered his twenty-third year.

Antonio Canova may be regarded as the restorer of sculpture in Italy. Since the time of Michael Angelo, there had been no one who was equal to him. He was born at Passagno, a town at the foot of the Venetian Alps, near Treviso, in 1757. His father, Pietro, and his grandfather, Pasino, were sculptors of some repute. At three years of age, by the death of his father, he became an orphan, and his mother being married shortly after, he was left in the care of a paternal aunt, Caterina Ceccato. For the rudiments of the art of sculpture he was indebted to his grandfather. Some of his boyish amusements in the way of forming models, being shown to Falieri, a patrician of Venice, he was placed under the instruction of Toretto. On the death of Toretto, he was placed under the care of Geo. Ferrari, nephew of Toretto, and worked with him on the statues that embellish the gardens of the Casa Tiepolo, at Carbonara. He also studied at the Academy of the Fine Arts, at Venice, where he won several prizes. Two baskets of fruit, executed by him in marble, when only fourteen years of age, which attest his proficiency, are to be seen on the first landing-place of the Farsetti Palace, now the Hotel della gran Brettagna, at Venice. In his sixteenth year, he executed his Orpheus and Eurydice. Dedalus and Icarus were executed soon after. In 1780, he went to Rome, and in the course of a year he obtained a pension from the Venetian government.

Pope Pius afterward appointed him Inspector-General of the Fine Arts in the Roman States. In 1810, he was invited to Paris, by Napoleon, when First Consul, which invitation he accepted. While at that court, he executed a colossal statue of the Consul in marble, and afterward one in bronze, and another of Maria Theresa, as Concordia. This is now in the palace at Parma. He received there the highest honors.

The imperial court of Vienna greatly desired to possess his works, and induced him to send a copy of his Theseus overcoming the Minotaur. The Emperor Francis ordered a temple to be erected in the imperial gardens for its reception. But the death of the sculptor prevented the execution of this design. He died at Venice in October, 1822.

His Cupid and Psyche, his Venice and Adonis, the Dancers, the Graces, Paris, Mars and Venus, and his Repentant Magdalen, abundantly establish his reputation as a great sculptor. These, with the devotional figure of Clement XIII., the Blind Man in his Monument of the Arch-duchess Christina, the Pugilists, Hebe, Polymnia, and the group of the Piety, of many of which no known models are furnished by antiquity, place him among sculptors of the highest rank.

A monument to the memory of Vittoria Alfieri, was perhaps his most elaborate work. It was executed at the request of the beautiful but unfortunate wife of the Pretender, Charles James Edward Stuart, grandson of James II.

A copy of his beautiful Hebe, executed by Tommaso Lazzerini, will be remembered by the visitors at the Crystal Palace. It stood, till recently, in the south nave.

Alfred Thorwaldsen was born at Copenhagen in 1770. When eleven years of age, he was placed by his father, a rough carver in wood, in the dock-yards of that city, in the Academy of Copenhagen. Here he obtained the highest marks of approbation. In 1787, he obtained a prize. In 1797, he went to Rome. In 1803, his "Jason" excited the admiration of connoiseurs, as it did of the multitude. It seemed a revival of the epoch of Phidias and Praxiteles. Mr. Thomas Hope, an English gentleman drawn by accident to his studio, so much admired it that he ordered a copy in marble, paying a very handsome price. This was the commencement of a series of brilliant successes terminating only with his life. From this time his reputation greatly and rapidly increased, and very soon he acquired both fame and wealth.

His most renowned work was executed in 1812, for the pontifical palace on Mount-Cavallo, which was to receive the Emperor Napoleon. Wishing to make an ingenious allusion to a great conqueror who was about to enter the capital of the world, he modelled with inconceivable rapidity the "Triumph of Alexander." This bas-relief was placed in the palace in July, 1812, and excited universal admiration. It even procured for him the title of "Father of bas-relief."

Among his famous works at this period, were Day, Night, Priam and Achilles, and Achilles and Briseis.

In 1819, he visited his native country, and was received with great public demonstrations of joy. It was during this visit that he conceived the idea of those decorations of the Church of Notre-Dame, at Copenhagen, which have made it one of the most interesting in Europe. On his return to Rome, he was received with marked honor by all the sovereigns and princes whom he met, and he soon became one of the most popular artists in Italy. Students and young artists flocked to him for instruction. Orders were sent to him from every quarter, and he also received other distinguished tokens of regard. As he passed along the streets, all bowed to him.

In 1828, he commenced his arrangements for carrying out a plan, long entertained, of leaving to his native country and city a legacy of his own productions, and of other works of art that should be alike honorable to all. In 1837, was commenced the erection of a building, designed by himself, to contain these works, and in the following year a royal frigate was sent to convey the rich gift to Copenhagen. In August, he himself embarked for his

native country. Never was king received more joyfully by his loving subjects, never a hero had so brilliant and triumphant an entry. In 1842, another frigate, the Thetis, took from Rome eighty cases more of these works of art, he having previously returned to that city.

In his last visit to Denmark, he executed two bas-reliefs, "Christmas Joy in Heaven," and the "Genius of Poetry."

His last work was the statue of Hercules, which now adorns the façade of the palace of Christiansburgh, at Copenhagen.

He died in the theatre in Copenhagen, March 24, 1844. The King of Denmark, and all the people of the city, followed his funeral-car, while the news of his death plunged the whole country into profound grief.

His works are very numerous, for he was constantly employed, even when surrounded by his friends, who were engaged in conversation.

The visitor at the Crystal Palace has not overlooked the group (very badly arranged) of the Saviour and his Apostles. In the church for which they were executed, the apostles stand in two aisles, along the length of the church, while the Saviour is placed behind the altar, surrounded by drapery, and at a considerable distance from the beholder. The statues of the apostles are executed in connection with certain symbols, which are not without meaning. Thus:

Paul bears a sword, the symbol of this glorious martyr.

St. Peter carries the keys. His right hand is raised to heaven, as if he could see that which he revealed, the God unknown to the sages of Greece.

St. John, with an eagle at his feet, the symbol of the penetration of his spirit. He has the posture of a man in ecstasy, as if he heard the sound of the angel's trump, while he is at the point of writing upon the tablet which he holds, the thoughts which occupy his mind.

Matthew, the Evangelist, is represented as about to write. He is meditating, as if seeking for true words. An angel by his side seems to dictate to the apostle the gospel which he indites.

Thaddeus is represented in a devotional mood. His hand is raised, as if in prayer, and his countenance and whole aspect as if absorbed in the contemplation of God.

St. Andrew bears a cross, the instrument of his own martyrdom.

St. Simon holds a saw, the glorious trophy by which he became a martyr.

Bartholomew holds a knife, to indicate the manner of his death.

St. Thomas holds a carpenter's square, to denote his former calling.

St. James, the Less, holds a club, with which he was beaten to death.

St. James, the Greater, holds a staff as a pilgrim, and as one who would continue his route; his hat being suspended from his shoulders.

The Angel of Baptism, in the centre of this group, is also very celebrated. The original, we are informed by a good critic, who has seen it, is very beautiful. This copy in plaster fails to give the remarkable expression to be seen in the countenance of the original.

This group, (with the bas-reliefs mentioned below,) is on sale. The proprietor hopes to sell it to some church. His price is about $3000.

Mercury, by Thorwaldsen, is also in the Palace, and is very fine. He appears to be engaged in playing the "flute," (pipes,) in which he so excelled, that by his enchanting music he opened the hundred eyes of Argus, when sleeping. It is at this moment of his triumph, that the artist has presented him, at rest, and viewing these wonderful effects of his own skill.

Ganymede and the Eagle, and *The Graces*, exquisite works of Thorwaldsen, are also in the Crystal Palace

Hope, a copy in bronze, also stands in the South Nave.

The following beautiful bas-reliefs are also now to be seen in the Palace, all the work of this great sculptor:

Bacchus and Cupid; Love and Psyche, (he is awaking her from sleep;) The Vintage; The Guardian-Angel; The Gathering of Apples, (with Cupid upon a Swan;) The Course of Human Life; The Holy Virgin, Christ and St. John; Pan and a young Satyr; Pan and a Hunting Nymph; Day; Night; and The Angel of the Last Judgment.

FISHER'S STEAM-CARRIAGE

HAVING tried his experimental carriage sufficiently to prove that, even if no greater economy can be attained than is actually attained in this first experiment, steam-carriages may be worked at less than two thirds the daily expense of horses, Mr. Fisher is now endeavoring to obtain capital to build a drag, (or carriage to draw others,) of about two tons weight; which is about the maximum weight that can be borne without injury by weak roads, and which will test its economy on all kinds of roads.

In answer to inquiries as to why he does not run his carriage where it can be seen by those who wish to be interested, he informs us that it is not sufficiently finished to run for hire; and he can not spare the time and money to run it gratuitously: but he is ready to run it for the information of those who agree to invest money as soon as he demonstrates what he states. And this course he deems but a just precaution against certain men who possess capital, and intend to engage in running steam-carriages as soon as they are convinced that they will pay. If these men will come to him, and agree to furnish capital when he has shown that it will pay, he will show them; but while he believes that they intend to set his labors aside, and go to the professional machinists, and thus rob him of the reward due to his efforts and outlay in reviving this invention, he will not give them any evidence beyond his simple statement; and would not give them even this, if he could accomplish his ends without some degree of publicity.

The success of steam-carriages does not now depend upon improvements in the invention, for which protection may be obtained by patents, so much as upon improvements in the proportions and details, for which no protection whatever can be obtained. As an example of the change of proportion required to adapt steam to different uses, we may mention that the old rule is, to give one square foot of grate surface, and nine square feet of boiler surface, to vaporize one cubic foot of water per hour; but, after twenty-six years of expensive practice, the proportions now recommended, in CLARK'S work on Locomotives, are one foot of grate and a hundred feet of boiler surface, to vaporize twenty-two feet of water per hour. And it is probable that proportions as different from the locomotive as those are from the marine boiler, will be required for the perfection of steam-carriages; and for these improvements in proportion no protection can be obtained; but every covetous jockey can adopt them, as soon as they are found, at the expense of others.

There is, however, considerable improvement possible in the invention, which may be patented. And it is the opinion of two able engineers, who built steam-carriages in England, that Mr. Fisher has made such improvements; and that his arrangement of machinery is much better than any they

have ever seen before. These engineers are Mr. JAMES STONE, who built Gurney's carriages; and Mr. M. BARAGWANATH, who built Hancock's carriages. If these improvements turn out as well as the opinions of these experienced engineers warrant our expecting, a profitable monopoly may be maintained against those who stand ready to help themselves, not only to all the old inventions, but to all the improvements in proportion and execution which men of genius and liberality may make, at great sacrifice of their talents, time, and money.

We think it fairly probable, then, that those who accept the invitation that Mr. Fisher has given to capitalists, inventors, and machinists, to join him in his enterprise, will find it profitable. If a small capital, for a few experimental carriages, is managed by good trustees, and the mechanical arrangements are successful, then the capital may be increased to a large amount, enough to resist the opposition of those who can not be restrained except by the arm of civil law. But if the improvements of Mr. Fisher be of great value, so much the more sure of profit.

We have seen occasion to contradict assertions that this invention failed in England, simply because it is impossible to run steam-carriages with profit on common roads. If these assertions were but the usual assurance of ignorance, that disbelieves and denies all that it has not seen, we might let them rest; but they are reiterations of an atrocious lie, for which the British House of Lords is responsible. We have examined the evidence upon this subject, published by order of the House of Commons, and are fully convinced that steam-carriages were mechanically successful, and would have become profitable, had they not been denied legislative protection against prohibitory tolls, obstructions upon the roads, and violent opposition of all kinds that could be made; and finally denied licenses, and driven off the roads by magistrates, for no fault but because they were likely to supersede horses, and thus diminish the demand for the produce of land. Such a system of oppression would be incredible, did we not know that for thirty years the landed interest kept up corn-laws, which made food nearly twice as dear in England it was in the rest of Europe.

ARMAMENT OF A SHIP-OF-WAR—THE MONTEBELLO.

THE journal, *France Maritime*, has treated with much ability all the scientific as well as practical questions connected with the fitting of ships of war for sea, and furnished very instructive articles for those interested in ship building and naval warfare. Lately it gave a full account of the armament of the Montebello, a 120-gun ship, which we give in translation:

"The armament of a man-of-war is one of the most difficult tasks. The naval officer has not only to plan how to store away in the most convenient manner the various objects of armament and the provisions, but he has also to distribute them in such a manner that their weight will correspond properly with the displacement of the water, without injury to the speed-management of the ship, and to provide for sufficient room to work the guns. To obtain these desirable results many changes have been introduced in the arrangement of the Montebello. The iron ballast has been diminished, in order that the centre of gravity may not fall too low. The guns of the upper and quarter-decks are no longer fore and aft as formerly, whereby the bow and stern

were overloaded. They are also removed from between the shrouds, where they could not be worked properly. The guns are placed now mid-ships. Before the year 1815, such ships had 132 guns; this number is now reduced to 120, and nevertheless the actual force of the ship is not diminished. The whole arrangement is better, gives more room for communicating with one part of the ship from another; the crew, consisting of 1089 men, are able to come on deck much easier when required for manœuvering and boarding. The hospital has been placed and arranged with quite philanthropic care; the sick have their own kitchen and dispensary near by. The stowage in the hold has been rendered more simple and regular by the introduction of sheet-iron chests, and by the adoption of chain cables instead of hempen ones. All the store-rooms are placed in the hold. The storage of such a quantity of divers articles in that narrow space called the general magazine, is truly a masterpiece of order and skill. The hold contains provisions for six months, with a reserve-supply for another six months; water for 135 days. Battle being the purpose of the armament of a man-of-war, all that belongs to it must be disposed in such a manner that no impediment and interruption will occur during the engagement. The passages between the powder-magazines must be so arranged that no interruption or disorder in the distribution of munitions to the different batteries can occur; neither must the removal of the wounded from the decks down the hold meet with any delay. The Montebello is 196 feet long, and but 50 feet beam. She carries 120 guns, of which 32 are of the calibre of thirty-six, 34 of twenty-four, 34 of eighteen, and 20 carronades of thirty-six. She can pour out at once 3300 lbs. of iron. The crew is composed of 1089 men. The supply of provisions for six months for the crew consist in: 158,122 pounds of biscuit; 61,060 pounds of flour; 49,484 pounds of salt meat; 61,120 pounds of dried vegetables, rice, cheese, etc.; 134,052 quarts of wine; 4390 of brandy; 67,722 pounds of coal; 140 cords of wood; and 367,000 quarts of water, at the rate of 25 quarts per day for each man; 9840 cannon-balls and 160 packages of grape-shot of different calibre; 61,500 pounds of powder, etc. The whole contents of the Montebello amount to 2730 tons, and yet there is everywhere space, air, and light; 1089 men live, move, and manage 120 guns as easily as on the Champ de Mars. The surface of the sails offered to the wind is 5601 square yards. The following dimensions and materials are employed in the construction of a three-decker: The length of the keel is 180 feet; the whole construction requires 113,000 cubic feet of wood, at 6 francs the foot. The width is about 52 feet, the depth 25. The three batteries are armed with guns of different calibre, as in the Montebello. The main-mast is 120 feet high, and measures 9 or 10 feet in circumference; it weighs 40,000 to 42,000 pounds. The main-top-mast that rises above the main-mast is 72 feet high, and, with the gallant-mast, the main-mast measures 250 feet. (The towers of Notre Dame are only 200 feet high.) The main-yard has 115 feet. The vessel must have a crew of 1000 to 1200 men, and may carry, beside, 500 or 600 soldiers.

The construction of such a ship requires 140,000 pounds of iron of all kinds; 56,000 pounds of copper in bars and nails; 2600 sheets of copper for the sheathing, weighing 31,000 pounds nails; and copper, also for sheathing, 5000 pounds; whole amount of copper, 90,000 pounds; iron nails, 1000 pounds; rolled lead, 6500; tow, 49,000; pitch, 15,000; tar, 9000. The sails require 31,500 yards of canvas, and the vessel having commonly two sets of sails, that amount is doubled. The great flag requires 270 yards of stuff; the ship requires 7000 tons of iron for ballast; and under sail and perfectly equipped, weighs over one thousand million pounds."

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

CURE FOR GARGET AND FOR WOUNDS.

MESSRS. EDITORS: In a number of the above-named work, there was a recipe, not long since, recommending the Iodide of Potassium as a remedy for gargety cows.

A gentleman in the town in which I reside, informed me he had a valuable cow afflicted with that disease; thought he should lose her, or be compelled to stall-feed her for beef. I gave him some of the iodide, with directions how to use it; the cow mended, (as averred by the owner,) in three days, and yet remains well, this being in the month of March.

Another in the neighborhood has lately been cured by the same medicine.

My object in making this public is, that our farmers may be assured the recipe is no hoax, but an invaluable remedy.

Recipe for healing wounds in domestic animals:

Take of sulphate of iron (copperas) ℥ i., one ounce.
Sulphate zinc, ʒ i., one drachm, (white vitriol.)
Water, one quart. Mix.

Keep a cloth or cotton-batting on the wound, wet with the liquid. It will heal readily.

Our farmers here make great account of this wash. Any one may make a trial with little expense. Yours, truly, ARIEL HUNTON.

Hyde-Park. June 21, 1854.

STATE AND COUNTY FAIRS FOR 1854.

STATE FAIRS.

Michigan, at Detroit,	Sept.	26 to 29.
Ohio, at Newark,	"	19, 20, 21, 22.
Vermont, at Brattleborough,	"	13, 14, 15.
Illinois, at Springfield,	"	12, 13, 14, 15.
Pennsylvania,	"	27, 28, 29.
New-York, at New-York,	Oct.	3, 4, 5, 6.
Connecticut, at New-Haven,	"	10, 11, 12, 13.
Indiana, at Madison,	"	4, 5, 6, 7.
Iowa, at Fairfield,	"	25.
Wisconsin, at Watertown,	"	4, 5, 6, 7.
New-Hamphire,	"	3, 4, 5, 6.
Maryland, at Baltimore,	"	3, 4, 5, 6.
Georgia, at Augusta,	"	23 to 28.
Springfield Cattle-Show, Ohio,	"	25, 26, 27.
Missouri, at Boonville,	"	2 to 6.
Lower Canada, at Quebec,	Sept.	12, 13, 14, 15.
Upper Canada, at London,	"	26, 27, 28, 29.

N. Y. COUNTY FAIRS.

Putnam, at Carmel,	Sept.	26, 27.
Washington, at North White Creek,	"	21, 22.
Franklin, at Malone,	"	20, 21.
Jefferson, at Watertown,	"	21, 22.
Albany,	"	26, 27, 28.
Duchess, at Washington-Hollow,	"	24, 25, 26, 27.
Oneida, at Rome,	"	19, 20, 21.
Columbia, at Chatham Four-Corners,	"	29, 30.
Delaware, at Delhi,	"	20, 21.
Rensselaer, at Lansingburg,	"	19, 20, 21.
Farmers' Society, at Morris,	"	20. 21.

EDITORS' JOTTINGS AND MECHANICAL RECORD

LOCOMOTIVES FOR HIGH GRADES.—The high prizes offered by the Austrian government for the locomotive best constructed to overcome the high grades of the Sömmering Mountain, have created quite an emulation among inventors; but all the improvements have tended more or less to increasing the size of the locomotive. M. Andraud seems to be the only one who has left the old beaten track, and invented a locomotive which promises to answer the purpose fully. He only changes the driving-wheels; all the other parts of the locomotive remain the same as are in use at present. This machine has six wheels. The drivers are placed in the centre. The rims of the drivers are very broad, much more so than those commonly in use. The part of the rim which projects considerably beyond the ordinary rail is striated. This is all the change he makes in the locomotive. Where there is a considerable grade, which requires a much greater power to overcome it, he employs a wooden rail, which he places on the outside and contiguous to the rails, of about five or six inches in width, rising a little above the surface of the iron rail, so that the striated portion of the drivers must impinge upon it. The striated part of the driving-wheels, and the wooden rails, are the only mechanical means with which M. Andraud proposes to overcome even much higher grades than have been hitherto attempted. The wheels are only put into action when their assistance is required. On straight lines the wooden rails would be placed on both sides of the iron rails; in curves of small radius, on the outside of the inner rail of the curve. The practicability of M. Andraud's invention is generally admitted, and he no doubt will obtain permission to experiment on some government road with higher grades.

A NEW RAILROAD-BRAKE.—M. Andraud has invented a new railroad-brake, which consists in a strong metallic reservoir, holding about 150 to 180 quarts. This reservoir is filled with compressed air, of eight or ten atmospheres, by means of proper pumps, which are worked by the locomotive. The reservoir is provided with a manometer, safety-valve, and a proper stop-cock, and so arranged and situated that the engineer can easily manage and observe any part of it. When a special person is employed to superintend the apparatus, it can be placed upon the tender. Every car is to be provided with a tube of an inch or more in diameter, each tube having on both ends elastic tubes, by means of which the tubes of each car can be connected with those of the other cars, so as to form a continuous communication with the air-reservoir. Each car is furnished with two cylinders of five inches diameter, which are placed below and on each side of the car-body. Each cylinder has a piston, to the ends of which the brakes are attached; the cylinders are connected with the long conducting-tubes, and when the air is let into the cylinders, their pistons are pushed out and force the brake against the wheels. When the air is stopped off, a spring or some elastic fixture withdraws again the brake from the wheels. The chief brakeman at the reservoir, who manages the apparatus, can by a single turn of the stop-cock act at once upon all the brakes at any moment's warning, which may be given by means of an electro-magnetic signal from any car in the train. The brakeman has only to keep his reservoir always properly charged, as the manometer indicates. M. Andraud calculates the expenses thus: The reservoir and air-pump, placed on the locomotive or tender, $1000; the apparatus, including the brakes attached to each car, $140.

The use of steam has been proposed for the same purpose and in a similar manner, but the unavoidable condensation of the steam, the filling up of the cylinders with condensed water, and the liability of bursting the tube in cold weather, are sufficient inconveniences to prevent its use. Condensed air is no doubt much preferable.

GOLD IN SOUTH-CAROLINA.—A vein of gold has been discovered upon the lands of James Lay, in Cheohee, S. C., which promises to prove extremely rich. The gold is encased in hard quartz, and is visible to the eye in large quantities.

CREEPING THINGS.—Let me put a spider into any lady's hand. She starts back aghast. She shrieks, "the nasty ugly thing!" Madam, the spider is perhaps shocked at your Brussels laces, and, although you may be the most exquisite painter living, the spider has a right to laugh at your coarse daubs as she runs over them. Just show her your crochet-work when you shriek at her. "Have you spent half your days upon these clumsy anti-macassars and these ottoman covers? My dear lady, is that your web? If I were big enough, I might with reason drop you and cry out at you. Let me spend a day with you and bring my work. I have four little bags of thread—such little bags! In every bag there are more than 1000 holes—such tiny, tiny holes! Out of each hole a thread runs, and all these threads—more than 4000 threads—I spin together as they run, and when they are all spun they make but one thread of the web I weave. I have a member of my family who is herself no bigger than a grain of sand. Imagine what a slender web she makes, and of that, too, each thread is made of 4000 or 5000 threads that have passed out of her four bags through 4000 or 5000 little holes. Would you drop her, too, crying out about your delicacy? A pretty thing, indeed, for you to plume yourself on your delicacy, and scream at us."

Having made such a speech, we may suppose that the indignant creature fastens a rope around one of the rough points of the lady's hand, and lets herself down lightly to the floor. Coming down-stairs is noisy, clumsy work, compared with such a way of locomotion. The things we scorn are miracles of beauty. They are more delicate than any ormolu clock or any lady's watch, made, for pleasure's sake, no bigger than a shilling.

Lyonet counted 4041 muscles in a single caterpillar, and these are all a small part only of its works. Hook found 14,000 mirrors in the eye of a blue-bottle, and there are 13,800 separate bits that go to provide for nothing but the act of breathing in a carp.—*Dickens' Household Words.*

VEGETABLE MECHANICS.—There is a remarkable tree on the farm of the late Hon. Olney Ballou, of Cumberland, R. I., which is an emblem of himself in his struggles against the obstacles of life. An old elm standing near a mass of rocks died. A young elm then appeared in a fissure of this rock, casting down its slender roots, and in twenty or thirty years it has become a foot and a half in diameter. Its roots have penetrated into and under the rock, and have lifted and thrown off about seven tons of it, and have loosened and partly lifted ten tons more, which in a few years will be separated from the mass. The roots, to bear the immense pressure upon them, have become changed from the ordinary appearance, and have a tough casing which may be compared to the skin of an alligator. The provisions thus made by nature for the growth of the tree under such difficult circumstances, furnish a striking specimen of what might be called vegeble mechanics.

HAIR AND FEATHERS.—The business which is carried on in these familiar and seemingly insignificant substances, of which our beds and cushions are mostly made, is a great branch of trade. The *Journal of Commerce* says that the local trade of New-York, in these two articles, is about $3,000,000. The firm which is most largely engaged in it consume annually $700,000 worth of hair and $1,000,000 worth of feathers. The feathers are purchased in the markets of Russia and South-America, and the hair, or at least a large portion of it, once floated gracefully to the breeze in the shape of the manes or tails of the wild horses of the South-American pampas. Immense numbers of these horses are killed annually for their hair, hides, and fat. The latter substance, upon its arrival in New-York, is transmuted into soap, and is doubtless often admired for its aroma and variegated colors. The *Journal of Commerce* says the process of preparing the hair is as follows: From the bales it is thrown into a "picker," making 800 revolutions per minute. After being thoroughly picked, it is twisted into ropes by machinery. This is done for the purpose of making it curl. It is next put into vats and boiled, for the purpose of cleansing it, after which it is thoroughly dried in an oven. The ropes of hair are then picked to pieces, and the hair is ready for use.

SECRET DISPATCHES.—A Paris letter to the *New-York Courier* says that the Olympic Academy of Vicenza, Italy, having carefully examined the discovery made by their fellow-citizen, Tremeschini, of electric telegraph by secret transmission, has publicly declared it to be a perfectly successful invention. The commission appointed to test its efficacy was composed of the Councillor Delegate of the Podesta, the Superior Commissary, and the Academic Council. The first experiment consisted in sending and receiving a dispatch in the common way, without secresy. In the second experiment, a dispatch was sent secretly, and the answer received in the same manner, by the aid of the new apparatus. In the third, a dispatch was sent openly, and the answer received secretly, to show that the secret apparatus might be used or suspended at will. The results of the inquiry show: 1. That the apparatus of Tremeschini may be applied to Morse's telegraph; 2. That when the dispatch is sent secretly, it can only be received so, any fraud in that respect being subject to immediate detection; 3. That secresy may be suspended or applied at pleasure. The report of the commission is highly eulogistic of the invention.

PROTECTION TO BANK-NOTES.—A new plan to prevent alteration of bank-notes, has just been invented by a young gentleman of this city. The great inducement for rogues to alter bills is the large portion of the genuine engraving which will remain on the note after the alteration is made, it being necessary for them to supply but a small amount of spurious work in place of that which they remove. This plan annuls that inducement, as from bills protected by it almost every particle of genuine engraving, and both signatures, must be erased before the counterfeit work can be added. No one will attempt to *alter* a bill, if they are first obliged to engrave a counterfeit plate. The inventor is Mr. Lloyd Glover, agent for the Bank-Note Engraving House of Danforth, Wright & Co., of New-York and Boston. This plan is now in the hands of the artists, and will soon be ready. Models may be seen at the Boston office.—*Boston Atlas.*

PROTECTING CLOVER HAY-STACKS.—Josiah Lackey writes to the *Iowa Farmer*, that he has tried to preserve clover-hay from the effects of the weather in the following manner, and found that it answered as well as if the hay had been put in a barn. Clover-hay put up in the ordinary mode, like Timothy, is apt to get musty and unpalatable, but put up in the mode recommended, it comes out good and sweet. He says: "When the stack, which is commenced the usual way, is raised to about one half its destined height, the ends of long wheat or rye straw are placed just on the edge of the stack, so that when the next layer of hay is placed upon it, the principal length of the straw will droop over the sides of the stack. Following this plan until the stack is finished, a complete and impervious covering is furnished to the hay, that will keep it nearly as well as the best barn. I think that the long cane-grass that grows in the sloughs of this country will answer a much better purpose, the straw being longer, and will turn quite as well."

TELEGRAPH APPARATUS.—Messrs. Brunner & Hipp, directors of the telegraphs of Switzerland, have invented a portable apparatus by means of which they can make connection with the wire at any point of the line, and communicate with the principal stations. The trial has been made at some point about five miles from Berne, where there exists no telegraphic station. The apparatus was connected with the wire, which communicates with Zurich, Basle, Geneva, and La Chaux du Fonds; messages were transmitted, and the answer immediately received. How much this apparatus differs from similar ones employed in the United States, I am unable to say; but, as far as I know, the thing has been already accomplished.

FITCHBURG, MASS.—This town has now $2,904,082 of taxable property, being an increase of some $600,000 since last year. The number of polls is 1754; the per cent of tax on property, .009. There are 283 persons paying a tax of more than $25, the highest on the list being Alvah Crocker, who pays $476.09. The total amount of property in the town, including the town-farm and church, is considerably more than three millions of dollars.

CHARLES OAKFORD'S HATS.—We published quite recently, a full statement of the past and present condition of this establisment, so well known in Philadelphia, and to many from abroad, who have become its patrons. We are most sensibly reminded of the excellence of his manufacture, by the remarkable degree of comfort experienced in the wear of one from his establishment during this excessively hot weather. We think we never wore so comfortable a hat. Go or send at once to Chestnut street, Philadelphia, and get one, if not already well supplied.

COTTON MANUFACTORY IN THE SOUTH AND WEST.—The Louisville papers state that the success of the extensive cotton-manufacturing establishment of H. D. Newcomb & Brother, of Louisville, at Cannelton, Ky., during the last year, has been unprecedented in the history of modern manufactures. Their mammoth mill now in operation at that place, turns off a daily production of goods, such as the very best domestic fabrics in market, equal to 15,225 yards.

The *Columbus (Geo.) Inquirer*, in noticing the first shipment of cotton-yarn to New-York, by the "Southern Rights' Manufacturing Company," of Monticello, says:

"Some of our Columbus factories have been in the habit of sending pretty large orders to New-York and Philadelphia, for more than twelve months past, which goes to prove that we are no ways behind the rest of the world, either in the facility for furnishing goods of superior quality, or at rates as favorable to the large purchaser as those at which he can buy the same goods nearer his own door. And the *cream* of the circumstance does not stop here, judging from a single transaction that occurred during the summer of 1853. A bale of goods manufactured in this city was sent to Philadelphia and sold. The next steamer from that city brought back the identical bale, which had been purchased by a merchant from the interior of Georgia, and who, on being told the cloth was made in Columbus, remarked, he thought it was the cheapest and best piece of goods of the kind that he had purchased for many years."

Up to the 1st September last, there had been shipped from Wakulla, Florida, 301 bales of cotton yarn, valued at $9050, all of which was manufactured at the Madison Factory, owned by Captain N. P. Willard. Since then there has been shipped 534 bales, valued at $16,020. Of these, 456 bales were manufactured at the Madison Factory, and 78 bales at the Monticello Factory. A small lot, manufactured at Madison, has been shipped from Cedar-Keys. The yarns from these mills are now sold in most of the stores of Middle-Florida, and the adjoining counties of Georgia.

The Monticello Factory (says the *Wakulla Times*) has been for some weeks manufacturing cotton cloth of a good quality.

SOUND OF BELLS.—The nearer bells are hung to the surface of the earth, other things being equal, the farther they can be heard. Franklin has remarked that many years ago the inhabitants of Philadelphia had a bell imported from England. In order to judge of the sound, it was elevated on a triangle, in the great street of that city, and struck, as it happened, on a market-day, when the people coming to market were surprised on hearing the sound of a bell at a greater distance from the city than they ever heard any bell before. This circumstance excited the attention of the curious, and it was discovered that the sound of a bell struck in the street reached nearly double the distance it did when raised in the air. In the air, sound travelled at the rate of from 1130 to 1140 feet per second. In water, 4708 per second. Sounds are distinct at twice the distance on the water that they are on land.

WISCONSIN.—The farmers of Wisconsin have commenced cutting their wheat. It is said that the crop will be a large one. The recent storm has done it no damage. The weather is now most favorable.

THE *Boston Atlas* states that the clothing business of Boston amounts to $12,000,000 or $15,000,000 annually. There are four houses which give employment, directly or indirectly, to about five thousand persons, each scattered throughout the New-England States, in most of which they have agencies.

SCHOOL-FURNITURE.—Whoever remembers the uncomfortable bench and ill-constructed desk of the old school-house, will rejoice to see the improvements of the present day. The manufacture of school-furniture by Mr. R. PATTEN, 24 Grove street, of this city, is a regular business, carried on by the aid of steam-power. He now employs from thirty to fifty hands in this business, and is able in a day to furnish desks and chairs or seats, graduated to the various ages of pupils, sufficient to supply an ordinary school-room. Tables, book-cases, draft-boards, etc., are among the numerous articles always on hand. Desks for counting-rooms, etc., are also made to order.

It is worthy of note that the school-chair or seat is so constructed and secured to the floor by an iron pedestal, that it offers no impediment to sweeping or cleaning—a great consideration.

NEW BOOKS.

THE PRACTICAL MECHANIC'S JOURNAL. Vol. 7. London and Glasgow: W. & J. H. Johnson. New-York: Stringer & Townsend.

THIS journal is printed and published in England, and is sold by our enterprising neighbors as above, who are the agents for this country. Three numbers of this volume have been received from the American agents. It is issued in monthly numbers, in quarto form, about 25 pages in each. It is ably written, and fully illustrated by engravings that are well executed. One chapter in each number is devoted to American patents, and is written by one of our own citizens. It is the best work of this description that we are acquainted with. Price, $3 a year. Single numbers, 25 cents.

OUTLINES OF HISTORY, Illustrated by numerous Geographical and Historical Notes, Maps, etc. By MARCUS WILLSON. New-York: Ivison & Phinney, No. 178 Fulton street.

THIS excellent manual appears in two "editions;" the University and the School edition. The latter has been laid on our table. It includes both ancient and modern history, is abundantly full of matter, well arranged and well expressed, and is handsomely executed. Teachers and committees should examine it.

A CHILD'S HISTORY OF ENGLAND. By CHARLES DICKENS. Vol. 2. Harper & Brothers: 1854.

THE first volume of this little work was noticed some months since. The second volume has been laid on our table. It brings the narrative down to 1837. It is a valuable book.

HARPERS' GAZETTEER OF THE WORLD. Nos. I. and II.

THE first two of the ten numbers which are to compose this work are on our table. They are beautifully executed, large octavo size, and each is accompanied by an extensive map, to wit, of the World, and of Central and Southern Europe. They occupy 358 pages of letter-press. The smaller places, rivers, etc., are of course but little more than named, while the larger and more important ones are treated at length, and apparently with great care. It occupies ground covered by no recent publication, and will be required, as it richly deserves a place for its own merits, in every library.

NATIONAL MAGAZINE, ETC. ABEL STEPHENS, Editor.

THIS popular monthly, now in its fifth volume, is a capital work—well written, well illustrated, and well executed. Its last recent numbers rank among the very best in our country.

THE FARMER'S LAND-MEASURER, OR POCKET-COMPANION. By JAMES PEDDER, Editor of the *Boston Cultivator*. 144 pp. small 12mo. New-York: C. M. Saxton. 1854.

THIS book shows how to measure land, and contains numerous tables showing the equisite length or width for an acre, when one only of these lines is known; also the number of furrows, hills, etc., at given distances on a given area; and various measurements the farmer has occasion to make.

CHEMICAL FIELD-LECTURES FOR AGRICULTURISTS. By DR. JULIUS ADOLPHUS STÖCKHARDT. Translated from the German, and edited, with notes, by JAMES E. TESCHEMACHER. 242 pp. 12mo. New-York: C. M. Saxton.

THE name of Mr. Teschemacher is enough to give substantial indorsement to any book on agriculture. We should require no other. Nor does this sort of evidence fail us in this little work. It is a capital exhibition of the subject discussed, inferior to none we have seen. It tells the whole story which has been so often attempted, and with various success, in much larger volumes. It is very handsomely printed.

MINISTERING CHILDREN, a Tale dedicated to Children. By the author of "Sunday Afternoons in the Nursery," "The Light of Life," "The Female Visitor to the Poor," etc. 415 pp. 12mo. New-York: Riker, Thorne & Co. 1854.

THIS is an admirable work, full of interest to persons of all ages. In the moral and religious influence it is calculated to exert, it is not surpassed by any similar publication we have ever seen. While it is full of incident, it is everywhere true to nature. We heartily commend it to Sabbath-schools and for private families.

FASHION AND FAMINE. By Mrs. ANN S. STEPHENS. New-York: Bunce & Brothers, 1854.

THIS volume, if not entirely new, is at least new in its present goodly features. Mrs. Stephens is well known as one of our most popular writers, and she deserves all the reputation she has earned. In giving this well-executed volume to the public, she has done it an essential favor, and deserves ample patronage. We hope she and her publishers will receive it. The story is remarkably entertaining, and, like the volume just mentioned, it has a most excellent moral

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List of Patents Issued,

FROM JUNE 6 TO JULY 4.

Dominique Emile Coutaret, of Roxbury, Mass., for improvement in the manufacture of sulphuric acid. Patented in England, Dec. 16, 1853.

Wm. R. Palmer, of Elizabeth City, N. C., for improvement in threshers.

Joseph Iler and Wm. Fitzpatrick, of Troy, for improvement in nail-plate feeders.

Tyler Howe, of Cambridgeport, Mass., for improvement in bed-bottoms.

David Prew, of Taunton, Mass., for improvement in cast-iron car-wheels.

Casimir Aboe, of New-Brunswick, N. J., for improvement in spark-arresters.

John M. Beebelder, of Cambridge, Mass., for improvement in insulating telegraph wires.

Thomas Ashcroft, of Dorchester, Mass., for improvement in operating cut-off valves for steam-engines.

Samuel Childs, of New-York, for improvement in stills for distilling fatty bodies.

Silas Constant, of Brooklyn, for lens-lamp chimney.

Nathaniel Dodge, of Orford, N. H., for improvement in the construction of tanning apparatus.

Anthony Faas, of Philadelphia, for improvements in the construction of accordeons.

Eli H. Green, of Baltimore, Md., for improved carriage-axle.

Geo. P. Gordon, of New-York, for improvement in tail-boards.

F. M. Harris, of Carroll, Ohio, for improvement in all-boards of wagons.

R. M. Handley, of Lynchburg, Ohio, for improvement in bed-bottoms.

Bernard Hughes, of Rochester, N. Y., for improvement in vices.

Wm. E. Jones, of U. S. Army, for improvement in saddle-trees.

Joseph Keech and Stephen Stillwell, of Waterloo, for improvements in winnowing-machines.

William Montgomery, of Roxbury, Mass., for improvements in machine card-teeth.

J. Vaughan Merrick, of Philadelphia, for improvement in exhaust fans.

Andrew Overend, of Philadelphia, for improvement in printers' friskets.

Chas. A. Wilson, of Newport, Ky., for improvement in operating valves for steam-pumps.

Martin Newman, (2d,) and N. C. Whitcomb, of Lanesboro', Pa., and G. C. Cole, of Hartford, Conn., for improvement in coupling.

David L. Lafourette, of St. Louis, for improvement in mills.

Bronson Murray, of Farm-Ridge, Ill., assignor, (through T. Rush Spencer, of Geneva, N. Y.,) to John S. Wright, of Chicago, Ill., for improvement in harvester-cutters.

David N. Kownover, of Danville, Pa., assignor to Richard L. Kownover, of Milton, Pa., for improved mode of closing wickets in canal-gates.

Lyman Clark, of Royalston, Mass., assignor to Lyman Clark and Jos. Sawyer, for instrument for trimming welts of boots, shoes, etc.

Charles Perley, of New-York, for improvement in adjustable rails for replacing cars on the track.

Charles Perley, of New-York, for improvement in chain-cable stoppers.

Samuel Perkes, of London, England, for improvements in crushing and grinding quartz and minerals. Patented in England, Oct. 12, 1852.

Merritt F. Potter, of Charlemont, Mass., for improvement in railroad odometers.

Ebenezer N. Price, of Salem, Mass., for improvement in bridle-bits.

Isaac Starks, of Genoa, N. Y., and Lyman Perrigo, of Croton, N. Y., for improved device for holding pieces in spoke-machines.

James L. Rowley, of Steuben county, Indiana, for improvement in carriages.

Ira Reynolds, of Republic, Ohio, for improvement in harvesters.

Charles Schinz, of Camden, N. J., for improvement in processes for hardening tallow.

John Stowell, of Charlestown, Mass., for improved steering apparatus.

Peter Sweeney, of Buffalo, for improvement in steam-boilers.

Wm. Shove, of Elizabethport, N. J., for improvement in buckles.

E. H. Sprague, of Zanesville, for improvement in locking up printers' forms.

Thos. Silver, of Philadelphia, for improvement in tightening windows.

David J. Slagg, of Hoboken, for improvement in operating bolts and locks for controlling series of doors.

G. B. Simonds, of New-Haven, Conn., and Abel Brewer, of Saugatuck, Conn., for improvement in spark-arresters.

Henry C. Sergeant, of Cincinnati, for improvement in feed-water apparatus to steam-boilers.

Thomas, Earl of Dundonald, of London, Eng., for improvement in compositions for coating telegraphic wires, and for other purposes. Patented in England, Oct. 6, 1852.

J. C. Taylor, of Camden, N. J., for improvement in soap-compounds. Patented in England, Sept. 17, 1853.

J. C. Taylor, of Camden, N. J., for improvement in soap-manufacturing processes. Patented in England, Sept. 17, 1853.

Anthony Vitally and Carl Kold, of Newark, N. J., for improvement in securing tools to their handles.

Geo. Yates and Eli Clayton, of Lancaster, Pa., for improvement in looms.

John Ryan, of Jersey City, for railroad car-ventilator.

James Wightman, of Pittsburg, for improvement in steam-boilers.

Geo. W. Wood and Lucius G. Webster, of Utica, for improved canal-lock gates.

Geo. Westinghouse, of Central-Bridge, N. Y., for endless chain horse-power.

James Weight, of Lawrence, Mass., for improvement in machinery for napping cloth.

Edmond Victory, of Watertown, N. J., assignor to D. M. Linsley and Geo. Goulding, of same place, for improvement in machinery for spinning wool.

Edwin Allen, of South-Windham, Conn., for improved veneer-polisher.

John Allender, of New-London, for improvements in metallic grommets.

D. C. Ambler, of New-York, for improvement in quartz-crushers.

D. C. Ambler, of New-York, for improvement in the setting of steam-boilers.

Gabriel Blondin, of New-York, for improvement in processes for treating paint.

Gabriel Blondin, of New-York, for improvement in paint-compositions.

Frederick M. Bartholomew, of New-York, for method of governing the action of valve-cocks.

Thos. H. Barlow, of Lexington, Ky., for improvements in cut-nail machines.

Mark S. Bassett, of Wilmington, Del., for flour-sifter and renovator.

Jos. Bone, of Warrenton, Ohio, for improvement in grain-winnowers.

Benj. Crawford, of Pittsburg, for improvement on high-pressure steam-engines.

Thos. Crossley, of Boston, for improved machine for printing woollen and other goods. Patented in England, April 5, 1854.

B. Franklin Day, of Philadelphia, for improvement in steam-engines.

Samuel Fay, of Lowell, for improvement in weaving double cloth.

F. A. Gleason, of Rome, for improvement in the construction of reed musical instruments.

Geo. W. Griswold, of Carbondale, for improved tool-handle.

Charles J. Harris, of Holyoke, Mass., for improvement in producing continuous circular from reciprocating rectilinear motion.

John Henry, of Lynchburg, Va., for improvement in cast-iron car-wheels.

Frederica Howes, of Yarmouth, Mass, for extra yard to topsail.

Solm. T. Huntington, of Syracuse, for improvement in carriage-tops.

Nathan Johnson, of Noblesville, Ind., for improvement in the mode of moulding bricks.

Chas. C. Lloyd, of West-Philadelphia, Pa., for improvement in gas-metres and regulators.

John S. Martin, of Boston, for improvement in painters' brushes.

Thomas G. McLaughlin, of Philadelphia, for improvement in radial arms for car-brakes.

Duncan E. McDougall, of Springfield, Mass., for improved burglars' alarm.

Anson Merriman, of Middletown, Conn., for improvement in steam-engine regulators.

Nathan F. Matthewson, of Providence, R. I., for improved watch-chain swivel.

Edmund Morris, of Burlington, N. J., for improved slate-frame.

Orwell H. Needham, of New-York, for improvement in breast-pump.

James F. Osborn, of Staunton, N. J., for improved method of turning casks, etc., from solid pieces.

Charles Parker, of Meriden, Conn., for improvement in cast-iron vices.

Benj. F. Reimer, of Philadelphia, for improvement in railroad car-brakes.

Jesse Reed, of Marshfield, Mass., for improved arrangement of ship's capstan and windlass.

S. Brockway Robinson, of Oswego, for machine for drying grain.

Warren Shaw and Perley G. Green, of Wales, for improvement in tentering cloth.

Adrian R. Terry, of Detroit, for improvement in coating gas-retorts.

Chas. E. John and Samuel Wethered, of Baltimore, for application of ordinary and super-heated steam, combined for heating purposes.

Joseph B. Winchester, of Medina, N. Y., for improved mode of raising and letting fall carriage-tops.

Wm. C. Wright, of Boston, for improvement in folding and measuring cloth.

Seneca V. Collins, of Charlestown, Mass., assignor to William O. Hickok, of Harrisburgh, Pa., for mode of setting and holding pens for paper-ruling.

Luther Hill, of Stoneham, Mass., assignor to himself and Lorenzo Stratton, of Feltonville, Mass., for improvement in machines for cutting out boot-soles.

Levi W. Mallory, of Philadelphia, assignor to Wm. Morris, of same place, for improvement in omnibus registers.

Stephen White, of Newark, assignor to Henry C. Jones, of same place, for improvement in padlocks.

Jonathan Amory and William P. Parrot, of Boston, for improvement in the furnace of steam-boilers.

Jesse Bauman, of Shepherdstown, Pa., for improvement in cider-mills.

Chas. H. Beatty, of Wheeling, for improvement in coffee-mills.

S. Oscar Cross, of Kingsbury, N. Y., for improved grape-frame.

Thos. H. Dodge, of Nashua, N. H., for improvement in gas and liquid regulators.

O. Esterly, of Heart-Prairie, Wis., for improvement in grass-harvesters.

Joe A. H. Ellis and Alex. Gordon, of Rochester, for improvement in reversible capstans.

J. Durell Green, of Cambridge, for improvement in breech-loading fire-arms. Patented in England, May 12, 1854.

Wm. Hall, of Boston, for improvement in bank-locks.

Daniel Hill, of Bartonia, Ind., for improved seed-planter.

Julius Hotchkiss, of Waterbury, Conn., for improvement in manufacturing suspender-ends.

Walter Hunt, of New-York, for improvement in sewing-machines.

H. M. Johnson, of Carlisle, Pa., for improved rotary cultivator.

D. W. Kennedy, of Staunton, Va., for improvement in drying cloth.

Geo. W. La Baw, of Jersey City, for improved mitre-machine.

Alex. B. Latta, of Cincinnati, for improved hydro-pneumatic force-pump.

John McF. Lyeth, of Baltimore, for improvement in coffins.

Wm. Mallerd, of Brooklyn, for improved regulator of gas-burners.

Wm. Mallerd, of Brooklyn, for improvement in gas-burners.

John H. McGowan, Jr., of Cincinnati, for improved double-acting force-pump.

John Melendy, of Southbridge, Mass., for improved fruit-picker.

Daniel Minthorn, of New-York, for improvement in inhaling-tube.

Wm. J. Miller, of Cold-Spring, for improvement in machines for cutting brads.

Thomas Penrose, of Ellington, Ill., for improved road-scraper and spreader.

T. H. Peavey, of South-Montville, Me., for improved charger for fire-arms.

Oliver Pier, of Harmony, N.Y., for improved trap for animals.

L. L. & A. L. Platt, of Newtown, Conn., for improvement in the manufacture of wooden buttons.

Hiram and Simon H. Plumb, of Honesdale, for improved mortising-machine.

B. D. Sanders, of Holliday's Cove, Va., for improvement in winnowers of grain.

Wm. H. Sanders, of Hastings, N.Y., for improved carriage-axle.

Pearly Seaver, of Oxford, for improved calipers.

Isaac Strub, of Cincinnati, for improvement in grinding-mills.

Thos. Sumner, of Paterson, for improvement in steam-hammers.

Hartwell L. Turner, of Strykersville, N.Y. for improved head-gate for water-wheels

Enoch Thorn, of Philadelphia, for improvement in ventilating sewers.

Philo Washburn, H. G. O. White, and George A. Copeland, of Taunton, Mass., for improvement in coffins.

Henry Weed, of Philadelphia, for improved mode of constructing wire bonnet-frames.

Wm. E. Woodbridge, of Perth-Amboy, assignor to Charles Humphrey, of same place, for improvement in whistling-tops.

Wm. F. Collier, of Worcester, Mass., assignor to himself and Joseph Boyden, of same place, for improved machine for feeding paper to printing-presses.

Milton D. and Lyman W. Whipple, of Somerville, Mass., assignors to Lyman W. Whipple and Robert B. Fitts, of same place, for process of engraving or printing upon glass.

F. C. Goffin, of New-York, assignor to Alfred B. Ely, of Boston, for powder-channel to doors of safes and bank-vaults.

David Brown, of Baltimore, assignor to John F. Clark, of Washington, D. C., and David Brown, aforesaid, for improvement in machines for moulding for metal castings.

Ira Carter, of Champlain, for improved pump.

Aug. F. Dalson, of New-York, for improvement in milk and other evaporators.

James Eberhardt, of Philadelphia, for improvement in the preparation of archil.

Henry B. James, of Trenton, N. J., for improvement in smut-machine.

Alfred D. Kelley, of Rochester, N. H., for improvement in heel-cutters. Ante-dated March 20, 1854.

Edward Lindner, of New-York, for improved magazine repeating and needle-gun.

Abner N. Newton, of Richmond, Ind., for improvement in breech and loading fire-arms.

James Noble, of Leeds, England, for improvement in combining cotton and other fibrous materials.

Thomas Pearsally, of Smithboro', N. Y., for ventilated flour-barrel.

Jacob Bevercomb, of Potetourt Springs, Va., for improvement in ploughs.

Philos B. Tyler, of Springfield, Mass., for improvement in cordage machinery.

Abraham Gesler, of Williamsburg, assignor to the "Asphalte Mining and Kerosene Gas Company," of New-York, for improvement in Kerosene burning fluids.

Galusha J. Bundy, of Lyndon, Vt., for improvement in potato-diggers.

Henry G. Bulkley, of Kalamazoo, for improvement in the construction of salt evaporators.

Aury G. Coes, of Worcester, for improvement in screw-wrenches.

Thos. Cox, of Lancaster, Pa., for improved machine for bending felloes.

A. S. T. Copeland, of Pittsburg, for improved mechanism for operating saw-mill carriages.

Archibald H. Crosier, of Oswego, for improved machine for creasing and leveling barrels.

Thos. W. Currier, of Lawrence, Mass., for improvement in sofas, crib-bedsteads, etc.

James A. Cutting, of Boston, for improvement in preparation of collodion for photographic pictures.

Dexter Dennis, of Barre, Mass., for improvement in finishing palm-leaf hats. Ante-dated January 4, 1854.

C. H. Eisenbrandt, of Baltimore, for improved valve for wind musical instruments.

William Finkle, of Cole-Creek, Ind., for millstone dress.

Robt. H. Forbes, of Boston, for improvement in lightning-rods for vessels.

Joseph Frey and D. B. Burnham, of Battle-Creek, Mich., for submarine battery.

Heman Gardiner, of New-York, for improvement in quarts-crushers.

Thos. Green, of Philadelphia, for improvement in steam-boilers.

Joel Gleason, of Geneva, for improvement in milk-strainers.

John R. Hague, of Pittsburg, for improvement in machinery for punching rivet-holes in hose.

Wm. C. Hibbard, of Boston, for improvement for regulating the motion of steam-boilers.

Enoch Hiddon, of New-York, for improvement in reading and writing-stands.

Fenton Humphrey, of Boontan, N. J., for improvement in spike-machines.

Samuel Ide, of East-Shelby, N. Y., for improvement in seed-planters.

Joshua K. Ingalls, of Williamsburg, N. Y., for improved catch for vault-covers.

Philip H. Keck, of Morgantown, Va., for improvement in wash-boards.

Jos. F. Laird, of Philadelphia, for improvement in ore-stamping machines.

Jos. Leeds, of Philadelphia, for improvement in controlling draught in brick and lime-kilns.

Wm. Henry Munts, of Norton, Mass., for improvement in paddle-wheels.

John A. Pitts, of Buffalo, for improvement in horse-powers.

Ben. Severson, of Philadelphia, for improvement in cast-iron car-wheels.

John S. Speights, of Baltimore, for improvement in brick-kilns.

M. J. Wheeler, G. W. Rogers, H. W. Pierce, and M. B. Tidey, of Dundee, N. Y., for improved leveling-plane.

Jerome B. Young, of Harper's Ferry, for improved mode in hanging bells.

Wm. H. Poindexter, of Fayette county, Tenn., administrator *de bonis non* of John R. Remington, deceased, late of Macon county, Ala., for improvement in cement compounds.

Henry Burt, of Newark, N. J., assignor to the Newark Patent Hosiery Company, of the same place, for improvement in knitting-machines.

Thomas Drayton, of Brooklyn, assignor to G. W. McCready, Jr., of New-York, for improvement in purifying oils.

Wm. Butterfield, of Boston, assignor to himself and Edgar M. Stevens, of same place, for improvement in sewing-machines.

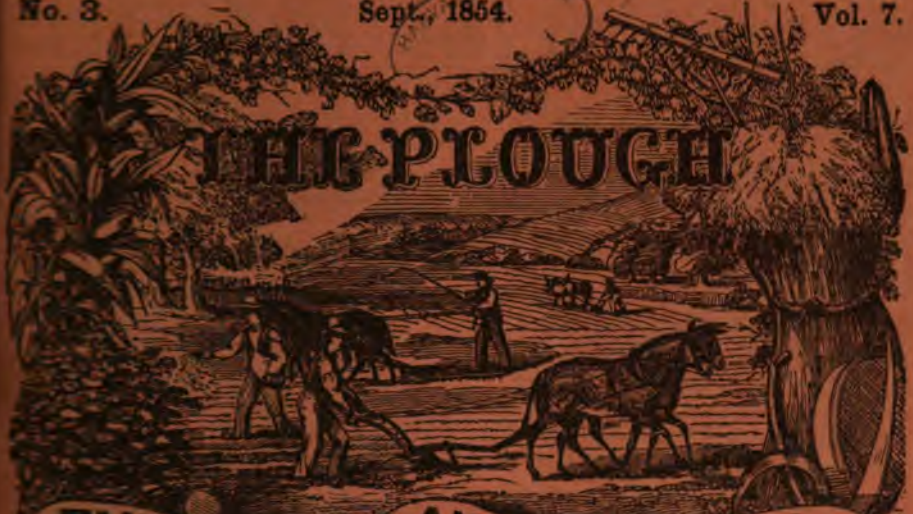
Sol. W. Ruggles, of Fitchburg, Mass., assignor to himself, Artemas R. Smith, and Joseph O. Austin, of same place, for improvement in self-acting cheese-presses.

John Taggart, of Roxbury, assignor to himself and Richard Pitts, of Dorchester, Mass., for improved machine for excavating earth.

Sci 120.105

No. 3. Sept., 1854. Vol. 7.

THE PLOUGH



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IRON SCALES, &C . &C.

New-York State Agricultural Society,
State Agricultural Rooms, Albany, Feb. 20, 1850.

At the Show of the Society, held at Buffalo, in September last, a *Cattle-weighing Machine* was erected by Messrs. T. & B. banks & Co., of St. Johnsbury, Vt. The Scales of Messrs. Fairbanks were selected as most likely to give satisfaction to the s itors of fat cattle. The judges appointed on miscellaneous articles awarded the first premium [of the Society for the mac which was erected by them,—and the judges on fat cattle, who superintended the weighing of all cattle exhibited, expressed approbation of the great accuracy of the machine.

BENJ. P. JOHNSON, Cor. Secretary.

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The Plough, the Loom, and the Anvil.

Vol. VII. SEPTEMBER, 1854. No. 3.

STATISTICS OF ST. LOUIS.

This city stands on the west bank of the Mississippi river, 18 miles below the mouth of the Missouri, and 1101 miles, by the course of the river, from New-Orleans. It was first settled in 1764. Its population in 1810 was 1600; in 1820, 4598; in 1840, 16,469; and in 1850, 82,774. It is the commercial metropolis of Missouri, and was formerly its seat of government. Its situation is excellent. It is elevated above the river, the ascent being rather abrupt to the first plane, about twenty feet above the highest water, and rises thence more gradually to a second plane, forty feet above the first. The higher plane extends toward the west as far as the eye can reach.

As a commercial place the situation is unsurpassed on that river. It is of ready access to the boats of the Mississippi, Missouri, Ohio, and Illinois rivers, and will, no doubt, become one of the great centres of trade in this country. Its trade now exceeds that of any other city on the river, except New-Orleans. It is also a point of departure for the American fur trade, for the lead mines of Upper Mississippi, and for the hunters, trappers, miners, adventurers, emigrants, etc., of all nations.

The following is an abstract of its trade, taken from a variety of authors, and shows a wonderful progress. This progress, however, is not more indicative of its own prosperity than it is of that of the Great West, which furnishes for it so extensive a commerce.

The following table (official) exhibits the amount of foreign goods imported and entered for consumption at St. Louis in 1852:

Sugar and molasses, foreign cost,	$418,172
Hardware, cutlery, etc.,	118,276
Railroad iron,	132,894
Earthen and glass ware,	80,729
Tin plate, tin, iron, copper, etc.,	59,826
Dry goods and fancy goods,	110,814
Brandies, wines, etc.,	32,985
Burr stones,	420
Drugs and medicines,	756
Cigars,	5,773
	$954,946

The amount of duties on imports was $293,298 74.

The principal products of the country, received at St. Louis for two years, as compiled by the Secretary of the Exchange, are given in the following able:

		1851.	1852.
Tobacco,	hhds.,	10,371	14,053
"	boxes,	8,380	12,388
"	bales,		300
Hemp,	"	65,366	49,122
Lead,	pigs,	503,571	409,314
Flour,	bbls.,	193,892	131,333
Wheat,	bush.,	1,700,708	1,591,886
Corn,	sacks,	1,840,900	344,720
Oats,	"	794,421	323,081
Barley and malt,	"	101,674	47,264
Beef,	bbls.,	8,872	11,165
"	tierces,	5,640	6,546
Pork,	bbls.,	103,013	66,306
"	tierces,	15,793	2,704
Lard,	bbls. and tierces,	52,208	42,515
"	kegs,	14,450	11,815
Bacon,	casks and hhds.,	16,791	11,285
"	bbls. and boxes,	1,564	1,790
"	pieces,	6,629	18,809
Whiskey,	bbls.,	47,991	46,446
Hides,		99,730	97,148
Bagging,	pieces,	2,746	3,650
Bale rope,	coils,	34,088	42,121
Sugar,	hhds.,	29,276	35,283
"	bbls. and boxes,	36,687	27,672
"	bags,		37,745
Coffee,	sacks,	101,904	96,245
Molasses,	hhds. and bbls.,	40,251	54,935
Salt,	bbls.,	46,250	42,281
"	sacks,	216,933	266,616
Nails,	kegs,	57,862	42,201

LEAD.—The product of the upper mines, received at the port of St. Louis is as follows:

1850,	567,496 pigs,	39,724,720 lbs.	Value, $1,766,750
1851,	540,000 "	37,800,000 "	" 1,577,600

There has been a constant decline in the product of these mines for several years. In 1847 they produced 778,469 pigs of 70 lbs. This decrease, it is said, is the result of several causes. Among these, emigration of the miners to California, want of sufficient economical machinery to drain the wet grounds, and want of sufficient capital, are the most conspicuous.

GROCERIES.—The annual imports at St. Louis, previous to 1845, were estimated at about two and a half millions, and the sales to three and a half millions of dollars. Since 1845, the grocery trade has about doubled. The total sales of the jobbing grocers for 1851 approximate $10,000,000, while the retail trade of the city approximates two and a half millions.

DRY GOODS.—The imports during the year 1851 were about $6,000,000, and the sales to the country the same year about $7,000,000, exclusive of the retail trade. Their importations were about three millions, and their sales nearly four millions, giving total imports about nine millions, and sales nearly eleven millions of dollars.

IRON will no doubt become, ere long, the heaviest manufacturing business of this city. Her iron ore is inexhaustible, and her coal is close at her door.

FLOUR.—The amount received for two years in the city, is as follows:

	1851.	1852.
Manufactured by the city mills, - -	408,000	393,184
Receipts per river, - - - -	184,446	131,333
" per wagons, - - - - -	45,000	89,461

The decrease of 1852 is imputed to the want of water in the rivers and the scarcity of wheat. The St. Louis brands stand high in the market. The mills are capable of turning out 3000 barrels a day.

WHEAT.—In 1850, the receipts at this port were 1,808,817 bushels; in 1851, 1,665,347, and 1852, 1,591,886 bushels.

[The grain market of St. Louis is rather decreasing in importance.]

CORN.—Large quantities of this crop are consumed in the production of pork, and a greater amount was probably thus consumed in 1852 than in 1851. Beside, much of the corn is shipped from a point on the Illinois river to Chicago as cheaply and expeditiously as to St. Louis.

RAILROAD ROUTES TO THE PACIFIC

THE journals of the day inform us that gentlemen of well-known ability have taken the initiatory steps for securing the very liberal offer of the government of Texas in aid of a railroad to the Pacific. It is said that the *bonus* offered will, with certain other grants already made, that can be appropriated to the same object, amount to a hundred million of dollars, while the road will not cost over twenty millions. Here, then, is "a chance" for capitalists, seldom equalled in importance.

We find in a recent *Boston Traveller* newspaper a communication on the same *general* subject, which we present to our readers. The writer, alluding to a former article, says:

"By the route which you describe there remain to be finished, between Boston and the Mississippi, less than 200 miles, and between Boston and the Missouri, opposite the Platte Valley, about 500 miles of railroad to complete the line of communication: namely, 150 miles from Indianapolis to Decatur, 40 miles from Naples to the Mississippi opposite Hannibal, 200 miles from Hannibal to St. Joseph, and 150 miles from St. Joseph to the Valley of the Platte. Thus two thirds of the distance from Boston to the Platte Valley have, by this route, been already overcome.

You are doubtless correct in your opinion that the Valley of the Platte must furnish one of the great railroad routes from the Missouri to the Pacific. But allow me to correct your statement that 'this route passes through the centre of the new territory of *Kansas*.' You intended to have written *Nebraska*, and not *Kansas*. Both forks of the Platte, running far north of Kansas territory, avoid altogether 'the Great American Desert,' through whose arid wastes flow the head-waters of the Kansas, Arkansas, and Canadian rivers.

You are also, doubtless, correct in the belief that within a very short period there must and will be an uninterrupted railroad communication from Boston to some point on the Missouri opposite the Valley of the Platte.

Having set myself right on this point, I will to my subject by asking the question, Is an employment within itself degrading, or is it made so by the individual engaged in it? Certainly the first question must be answered affirmatively. To illustrate. A man is looked on as degraded, who performs duties of common hangman, or one who acts as a spy for the police. I care not how elevated the situation of the individual may have been previous to his embarking in these employments, he will be looked on as degraded when he does. But reverse it: cause either of these individuals to whom we have referred to be engaged as an agriculturist, a mechanic, or merchant, and his former reproach will begin to leave him, and finally, if his course is unexceptionable, it will entirely disappear.

The next question that presents itself is this. If it is the calling that casts the stigma on the man's character, how is it that the negro, as my property, can degrade the employment that assisted to confer honor on the noble Roman who left his plough to save his country? It can not be, and this I shall endeavor to prove. A state of labor is a state of necessity growing out of man's disobedience to his Maker. The penalty attached to that disobedience was, that "in the sweat of his face he should eat his bread." To make the punishment greater, he inherited a disposition preferring rest to labor. Man labors not from choice, but necessity. Necessity then is his master, though frequently rewarding him in this our happy country most bountifully, if he is industrious and faithful in his work. But if he proves the contrary, the pinching hand of want punishes him, involving, unfortunately, his family with him. But in some countries where labor is abundant, he is rewarded scantily, being ever a stranger to those comforts that gladden the journey of life. It is sometimes the case that this master (necessity) forces him, in every land, into the employment of some tyrannical master, and because his physical powers are not beyond mortal man, he is sent adrift, probably with the reputation of being lazy and unworthy of employment, which character too often sticks to him like the coat of Nessus. Should he have a wife and little ones, they have to share in his suffering.

Most of the above applies to our blacks, but in an altered form. Circumstances have made the black man our property; necessity forces him to labor for us, for which he receives a good supply of clothing and food, while in sickness and old age he is cared for. Thus, if from no other cause, from pecuniary interest he is taken care of by his master. His master may unfortunately be unreasonable and cruel, but we have here a powerful tribunal, public opinion, that most generally forces him to respect the rights of humanity. But is our labor degraded because we have what might be considered complete authority over the laborer? If so, how do you look on the occupation of the gallant tar? He is completely in the power of his commander; but to him we are indebted not only for the comforts but luxuries of life, and by his dauntless spirit in maintaining our rights, we are respected everywhere. If this objection be well taken, and this the effect produced by this state of things, what think you of those who, at Lundy's Lane and Cerro Gordo, under the stars and stripes reaped a harvest of glory? Did not ninety-nine one hundredths have to acknowledge the unlimited authority of their superiors? The objection may be, that because the slave is forced to engage in labor he does not prefer, therefore labor is degraded. If that be so, what will you do with the thousands of white operatives that are forced into labor equally as toilsome, and often more prolonged, and more unhealthy?

The rule is thought to apply, that as a man is judged by the company he

is found in, that to labor with a slave is degrading. Let us see whether this is a general rule. Is it not where our associates are from choice, and not necessity, that this rule holds good, as in the pursuit of pleasure? As that of labor is one of necessity, can it apply? A man has to travel through a dangerous country, and unless he avails himself of the company of a blackleg, he would have to go in great peril. Is he degraded because he seeks self-preservation? Again: our country beats to arms. Is the respectable man who volunteers degraded because he is found in the same ranks with a man that makes swindling a profession? Can he not with reputation, side by side with him maintain the honor of his country? Do you in society place him on a level when it becomes necessary that they should both be found in the same ditch, spade and pick-axe in hand, making a fortification for their mutual safety? I think not.

The presumption is, that a parent's desire is to elevate and not degrade his child. How happens it, then, that a majority in Mississippi teach their children how to work, and that with their negroes? Many of them, even after becoming proficients, continue to do so until they attain maturity, except whilst they are at school. This is one principal source of supply of good managers. Leaving home at twenty-one, they seek employment as such, at small wages, agreeing at the same time to work with the hands, when the number is small. Very few persons owning under ten field-operatives, but who labor at the plough and other plantation work. But when the force is above that, they find full employment, by superintending the labor of others, with other matters pertaining to the concern. When there are fifteen hands or more, it is usual to employ a manager. Still, if the owner does his duty, it is impossible for him to live a life of idleness. In some cases, an overseer is dispensed with, where a trusty intelligent negro superintends the work of others. Where labor is performed, and carried out in this way, can it be degraded? It is impossible, and those who say it is, betray their ignorance, or are guilty of asserting a falsehood. As corroborative of my position that our labor is not degraded, permit me to offer a case in point. A young man owning ten or twelve hands, of little experience in planting, settled on a place adjoining one of our most respectable and wealthy citizens. He being a person of large experience, the young man called on him for advice, which of course he gave. Circumstances transpiring adversely, the young man found himself in the grass and weeds. He went to his experienced friend to know what he should do. Do you suppose he advised him to stand still, and not degrade himself by work? Very far from it. He asked him if he had an idle horse. If he had, to take off his coat, and lay hold of the plough-handles. In relating the case, the old planter concluded by saying that had he not taken this part of his advice, he could never have received any more from him.

This course of remark shows also that the belief that slavery creates an aristocracy that looks with contempt on the man that labors with his hands, is without foundation. As a class, we have nothing of an aristocracy, though there may be a few that are foolish enough to make such assumptions. When they do, the common sense of our community convinces them very soon of their mistake. I do say it without the fear of contradiction, that in Mississippi, where I have spent nearly forty years of my life, and that in different portions, the industrious honest man that toils for his daily bread is as much respected as he is anywhere north of Mason's and Dixon's line. How can it be otherwise, where a large majority have been the fashioner of their own fortunes? By doing so, they would be reflecting on their parents, and

on their own former situation in life. One thing we have reason to be proud of, and that is, we have very few that can be recognized as truly poor. Many have to labor, yet they feel themselves independent of the rich man, and are not objects of charity.

It is urged, that free can not compete with slave labor. As the price of labor is in a great measure influenced by the value of the commodity produced by that labor, and as that is ever fluctuating, it is difficult to be any thing like precise. But being informed as to the value of one great staple, which with us has a controlling influence, I can speak with assurance in respect to my own neighborhood. I shall then give what it is worth with us, leaving it to others to determine for other places.

A good field hand is worth, per annum,	$200
To feed, clothe, and pay the taxes,	30
The time he may lose by sickness and bad weather,	20
Doctor's bill,	5
His portion of cost of overseer,	15
	$270

We have very few that hire themselves as laborers, except as overseers or mechanics. The reasons are, that most frequently our young men marry before leaving their parents, or soon after. Land being cheap, they secure a home of their own, which to a man with a family is far preferable to an unsettled life. The few that engage as managers receive for their services $300 to $600 for the year, with their board and horse found. On the Mississippi river, even more is given by many. Mechanics get $2 per diem, and more, with their board.

INFLUENCE OF AGRICULTURAL SOCIETIES.

BOOKS FOR PREMIUMS.

We have had occasion in former issues to commend the talents and personal influence of Mr. Brush, late President of the Franklin County Agricultural Society of Ohio. He has done much for the cause in his own State, and indeed over the country. We are happy to republish the following sensible remarks, first presented in his farewell address, on resigning his office of President, on the 29th of April last:

"The object of our Society being improvement, its efforts should be directed to disseminating light and knowledge. 'God said, let there be light and there was light,' where all before was chaos and darkness.

That our lands are not cultivated as they should be, we all know too well; and that the only way to remedy this great evil is to instruct our farmers in the right way, is too clear for argument. How is that instruction to be diffused through our country, and how is a correct agricultural education to be furnished to our farmers? Our Society has got upon the right track. That track is the awarding of agricultural papers as premiums. Hundreds and thousands will obtain knowledge in this way who would otherwise live and die in ignorance. Our Society should persevere in this, and increase the number of awards of this character. Those who desire to make money out

of the Society will object, but heed not their complaints, and they will soon cease, and what cause is there for complaints?

I have already shown that no man has any right to be paid for being better off, more lucky, or having better articles than others. And none can complain that receive such premiums as we offer. If we in our awards comply with our offers, we have fulfilled our contract. But there is one branch of improvement in an agricultural education to which I particularly invite your attention and the direction of your efforts. This is the instruction the Society can give to the farmers of Franklin county in the proper cultivation of the soil. It is the most important and at the same time most difficult of all the duties we have to perform, and, without performing this duty, we shall fail in the great object of our Association. This is a *vast subject*, embracing, when thoroughly understood, a perfect acquaintance with all the natural sciences and all the laws of nature.

The knowledge of geology and chemistry must be acquired before any claim can be made to the title of a farmer. Geology teaches us what are the elements of which this earth is composed, and chemistry how to analyze and discover them.

'Geology is indeed a magnificent science. What excites more the imagination? What exercises more the mind? Can we conceive any thing more sublime than the gigantic shadows and the grim wreck of an antediluvian world? Can we devise any plan which will more brace our powers, and develop our mental energies, than the formation of a perfect chain of inductive reasoning to account for these phenomena? What is the boasted communion which the vain poet holds with nature compared with the conversation which the geologist perpetually carries on with the elemental world? Gazing on the strata of the earth, he reads the fate of his species. In the undulations of the mountains is revealed to him the history of the past, and in the strength of rivers and powers of the air he discovers the fortunes of the future. To him, indeed, that future, as well as the past and the present, are alike matter for meditation; for the geologist is the most satisfactory of antiquarians, the most interesting of philosophers, and the most inspired of prophets; demonstrating that which has past by discovery, that which is occurring by observation, and that which is to come by induction. I am already an antediluvian, and instead of the horse bounding over the plain, I witness the moving mass of a mammoth. I live in other worlds, which I have at the same time the advantage of comparing with the present.'

Language would fail me, gentlemen, were I to attempt a description of the kindred science of chemistry, such as is contained in the above quotation of geology, and yet the science of agriculture includes both, as well as the other natural sciences.

Our Society can not teach these sciences to our farmers, but we can

1st. Induce them to educate their children, by convincing them that agriculture is a science, and not an art; that it is not to be learned by practice alone; that, in order to make thorough farmers of their children, it is absolutely necessary to educate them; and that the most profitable investment they can make with their money, and the best fortune they can give to their children, is a good education.

2d. We can give light and knowledge to the people by distributing amongst them agricultural papers of the first class, in which they will find the practical results of scientific farming, and can be improved very much in the management of their farms, and awakened to a necessity of having a higher degree of knowledge imparted to their children.

3d. By awards of premiums on farm crops, we can excite emulation and also inquiry into the best method of so cultivating the soil as to produce the greatest amount of crops with the least labor, and at the same time keep up the fertility of the soil.

4th. By the introduction of the best farm implements, we accomplish one point, to wit, the increase of crops to some extent, and the saving of labor.

But the greatest difficulty yet remains to be solved. Our farmers must learn *that where there is abstraction there must be restitution.* That practice alone, and being brought up to the plough from infancy, will not make a farmer. And that we are fast wearing out our lands, and instead of living on our incomes, we are spending the principal of our fortunes."

THE COAL-FIELDS OF THE WORLD.

From an interesting selected article, published in the *Practical Mechanics' Journal*, we condense a brief account of the coal-fields of the world. Great Britain occupies the first rank, both in the quantity and quality of her coal-production. The amount which she yearly produces is 32,000,000 tons. Belgium comes next, with 5,000,000 tons; the United States produces nearly the same quantity; France, 4,200,000; Prussia, 3,500,000, and Austria about 700,000.

Belgium, the second coal-producing country on the globe, is traversed in an east north-east direction by a large zone of bituminous coal formation, from which she derives her supply. This zone occupies an extent of 331,392 acres, or about one twenty-second part of her whole area. France procures coal from fifty-six of her eighty-six departments. This yield is divided among eighty-eight coal-basins, and comprises both the bituminous and non-bituminous varieties. Her production, which is now 4,200,000 tons, was at the commencement of the French revolution but 240,000 tons, the greater part of which came from two coal-fields. The greater quantity of her coal is inferior to that of the British. Coal is daily getting into greater favor with the French, and it may reasonably be expected that with increased demand and the growing facilities of railway transport, it will be reduced so much in price that it may be employed in gas establishments without the necessity of receiving aid from abroad. The national steam-marine of France even now derives its coal from Great Britain.

Many of the provinces of Prussia are rich in coal-basins similar to those in England. Peat, however, is in extensive use in Prussia, Bavaria, and Wirtemberg. At Berlin and its environs it is employed in almost all the workshops, and, on account of its application to the production of gas, its consumption is regularly increasing. Austria possesses extensive coal-beds, but the working of them has not yet been carried on to any great extent, there being a plentiful supply of wood, and at low prices.

The United States yields bituminous and anthracite coal in abundance. She is young and vigorous. She possesses railways and ships to aid in developing her mineral resources, and doubtless in a few years more her coal-production will be only exceeded by that of England. The following is a list of her principal coal-fields:

States.	Area of States. Sq. Miles.	Coal Areas. Sq. Miles.	Proportion of Coal.
1. Alabama,	50,875	3,400	1-14th.
2. Georgia,	58,200	150	1-386th.
3. Tennessee,	44,720	4,300	1-10th.
4. Kentucky,	39,015	13,500	1-3d.
5. Virginia,	64,000	21,195	1-3d.
6. Maryland,	10,829	550	1-20th.
7. Ohio,	38,850	11,900	1-3d.
8. Indiana,	34,800	7,700	1-5th.
9. Illinois,	59,130	44,000	3-4ths.
10. Pennsylvania,	43,960	15,437	1-3d.
11. Michigan,	60,820	5,000	1-20th.
12. Missouri,	60,384	6,000	1-10th.

The above table gives an aggregate area in 12 States of 565,283 square miles, of which 133,132 miles, or nearly one fourth, is composed of coal-beds. After making all due allowances for such coal-beds as would never be reached by the miner, we have left an enormous yielding area.

Canada contains no workable beds of coal, but Nova-Scotia, New-Brunswick, and Newfoundland are said to be rich in the article.

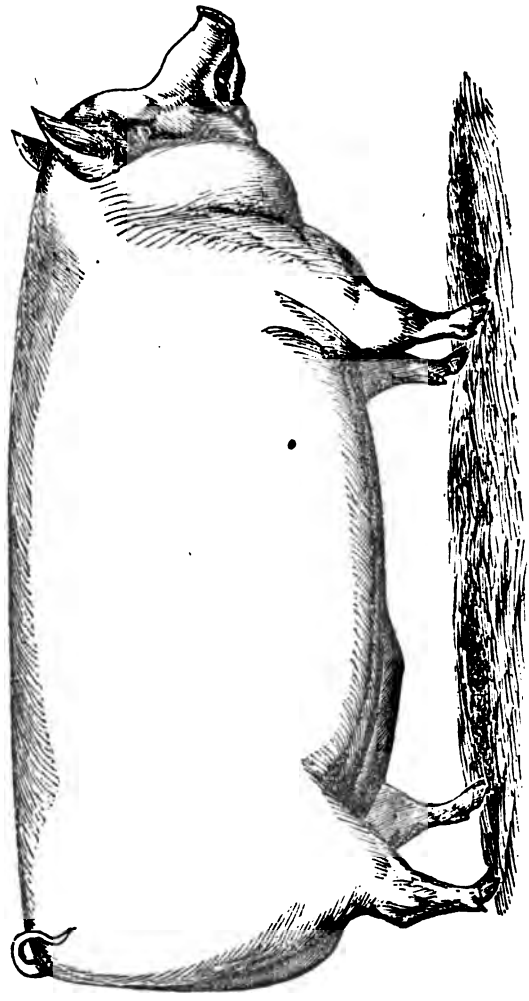
Most of the minor countries in Europe yield coal. In Russia, on the northern shore of the Black Sea, bituminous coal (brown) has been found in abundance. The richest Russian coal-field is on the shores of the Sea of Azof, between the Dnieper and Donetz rivers; it is said to be equal in quality to the best English, and may be delivered at a port on the Dnieper or the Don rivers for about 4s. or 5s. per ton. Little is known of the carboniferous system of Northern Russia. St. Petersburg is lighted with gas produced from English coal.

Coal-beds are found in Egypt and various parts of Africa and Asia.

China will doubtless become, ere long, a coal-producing country.

RAILROAD FARES IN VIRGINIA.

The Savannah *Georgian* says: "Virginia has for years borne the reproach of charging more exorbitant rates of fare on her railroads than the States either north or south of her. The traveller passing through Georgia pays not more than three cents per mile; in North and South-Carolina about the same. Reaching the Old Dominion, he encounters a tariff of four or five cents. Beyond that State he again finds himself where three cents or less per mile will pay his passage. But it seems, high as has been the charge on the Virginia roads hitherto, the public are to be called upon to suffer a still further imposition in travelling through that State. From the *Richmond Enquirer* we learn that the fare on the Richmond and Petersburg road, hitherto five cents per mile, is hereafter to be six—just double the rate at which our Georgia roads are declaring their handsome dividends. Those of our readers who know something about railroad management, will not be surprised to learn that the road above-named pays poorly. If its sapient president and directors would press the figures a little further, and carry up their charge to ten cents, it would probably pay *nothing*. True policy, both as regards the interests of the public and of these corporations themselves, suggests that they should rather do a large business at moderate charges, than do little at exorbitant rates."



IMPROVED SUFFOLK BOAR.

Bred by Dr. Morton, Etherton Farm, West Needham, Mass., for which the *First Prize* was awarded by the Norfolk Agricultural Society, at the Exhibition, 1853.

IMPROVED SUFFOLK SWINE.

The boar represented in the engraving carries with him his own recommendation. The improved Suffolks, as our readers well know, have an established reputation above all others. They can be kept at less cost, and fatten faster than any other breed; while the pork is more delicate and sweeter. They also mature early. At twelve to eighteen months old they weigh from two hundred to four hundred and fifty, or even five hundred pounds. Mr. Wm. Stickney first imported the Suffolks, and now Dr. Morton appears to be one of the most successful in breeding the improved varieties. He sells at prices from $20, $25, $30, etc., to $60 for sows; and his Prince Albert Boar he holds (if not sold) at $150.

THE AGRICULTURE OF JAPAN.

The islands comprising Japan proper and improper, are something over three thousand in number. The four principal ones have been compared to England, Scotland, Ireland, and Wales, with a similar size and climate. The soil is not naturally so good, but it has been rendered very rich and productive by the cultivation that has been pursued. Japan has about the latitude of Southern Europe, though the climate is colder. In portions of the empire deep snows lie for weeks and months in the winter.

One feature of the cultivation in Japan is that there is no waste land. So valuable is the soil that every inch of it is cultivated. The ploughing on the hill-sides is performed by men, while on the plains oxen and horses are used.

The soil of Japan is volcanic in its nature, and the farmers as well as other classes are interrupted in their business by frequent earthquakes. At times the destruction of life and property is immense.

The Japanese farmer is not independent, but a person of a low class, who hires instead of owning his farm, and allows his wealthy landlord six tenths of all he produces. Among the fruits of the earth in Japan may be mentioned wheat, barley, Indian-corn, rice. To these may be added beans and most of the vegetables common with us. Rice is one important crop, upon which the natives principally subsist. They scarcely ever partake of meat. The Japanese do not regard epicurean food as the greatest luxury, but a large number of devoted servants.

Most of the wild and tame animals found with us abound in Japan, though not, perhaps, in so large numbers. The cow is there, though the people know nothing of the use of butter and cheese. Horses they have in moderate quantities, and of different sizes and value.

It often rains in Japan for the most of the year. June and July are called the rainy months, as rain falls continually. By the falling of so much rain the streams are usually quite high and not easily fordable.

The mode of raising rice in Japan, and of wheat and barley, which is similar, may be thus described: The soil lies under water until the beginning of April. The farmers then turn it over with crooked hoes, or sometimes by oxen or cows. They sow the rice in small beds, about the breadth of a foot, separated by furrows of the same width. The furrows become drains. When about a foot high, the rice or barley is transplanted by women.

Other crops that are freely raised in Japan, are tobacco, cotton, tea, sugar, and, indeed, about every thing raised in the United States, and some few things besides. Fruits of almost every description, such as oranges, lemons, figs, pears, walnuts, chestnuts, are very abundant, as are vegetables, upon which last the natives much subsist. Among other things, the natives consume large numbers of turnips, raw as well as cooked.

Almost every house in Japan has a garden, and it is usually so constructed that the dining-room looks out upon it. The people take much pains that their gardens appear in the best condition and contain every thing "pleasant to the sight as well as good for food."

One strict regulation in Japan is, that he who omits to till his soil for one year, shall sacrifice it and be compelled to yield the premises to a more worthy farmer. It is by such rigid laws that there is no unimproved land in the whole empire. Various kinds of fowls abound in Japan, though the religion

of the country not allowing the people to eat meat, very little use is made of them. We read of the common barn-fowl, of geese, ducks, turkeys, etc.

The swine of Japan mostly run wild. Other wild animals abound, such as deer, bears, buffaloes, monkeys, foxes, hares, etc.

The farmers, so valuable is their land for cultivation, have cut down their forests principally. Coal is their chief article of fuel. The trees that stand are mostly of the greatest value, such as cedar, camphor, fir, cypress, mulberry, paper, and varnish trees.

The famous Japan ware, that used to be so fashionable with us, was varnished with a substance procured from the varnish-tree of that wonderful land.

Japan is a most interesting farming country in this respect, that all its produce finds a home market, so populous is the land. Not a dollar's worth of any thing is shipped to foreign lands, but all is sold in some part of the empire.

Altogether Japan is a most interesting country to the farmer.

"IS THE FIRST MILK POISONOUS?"

The first secretions from the udder contain *colostrum*, the properties of which are not fully known. It is supposed to be a cathartic, provided by nature, and well adapted to the wants of the offspring, removing the viscid contents of the intestinal canal.

Diarrhœa, convulsions, and death have been produced in young children, by the too copious and long continued secretion of *colostrum* in the mammal secretions of their mothers.

Colostrum is not a secretion peculiar to cows, neither is it poisonous to swine alone.—O. C. Gibbs, M.D., *Perry, Ohio.*

On this subject, William Garbutt, an old experienced farmer of Monroe county, communicates the following to the *Wool Grower:*

"All rich food, when taken in too large quantities, produces injurious effects. Let a hungry ox eat too many raw potatoes, and they will kill him; let a horse have too many oats, or too much cold water when he is warm and thirsty, and it will founder him. Give a new-calved cow a pailful of rich milk-feed slop, and it will probably kill her; and it will have the same effect on a sow just pigged; too much raw whey will kill a pig, so will dry buckwheat when too much of it is eaten. But that is not evidence that all those nutritious and valuable foods are poison; it only proves the want of knowledge or lack of prudence in the feeder.

Give a cow after calving half a pailful of her first milk, and it will be very beneficial to her, by loosening her bowels and promoting her cleansing. Cows' first milk is rich and very loosening, and such food is injurious to sows heavy with pig. Instead of giving the sow the first milk clear, had they put it into the swill-barrel and mixed it with the other swill, it would have been very valuable to the sow.

The success of a breeder depends much on his prudence in feeding, to adapt the quantity and quality of the food to the wants of the animal. To produce the desired effect, at the least expense, requires much judgment and skill in feeding, and it has to be acquired by experience."

GUANO IN THE CANE-FIELD.

We take the following from a late number of the *New-Orleans Delta:*

ESTATE OF EDMUND J. FORESTALL, PARISH OF ST. JAMES.—VICTOR J. FORESTALL'S DIARY.

March 31, 1853.—*Sugar-Cane Plant.*—Opened a furrow between two rows of canes, put in a tract of guano, and covered the same by plough; prepared in the same manner twenty-five arpents, using about two hundred and twenty pounds of guano to each arpent.

Opened a furrow close to each row of canes, each side, applied the guano in the same manner, and putting in the same quantity as above on twenty-five arpents.

Note.—The above two pieces of land are selected for an experiment, because of their requiring renovation, and being used this season not to lose extra plant-canes remaining.

April 6, 1853.—*Corn.*—Applied to each hole one handful of guano, covering the same; sowed five arpents of corn.

April 6, 1853.—*Orchard.*—Prepared a circular ditch, one foot deep, of the diameter of each tree, put in a tract of guano, and filled up the ditch with earth.

March, 1854.—*Result.*—The above fifty arpents of guano canes turned out the largest and heaviest canes in the field, and produced first and second clarified sugars, two thousand five hundred pounds per arpent. On the same ground I had never before obtained more than one thousand pounds per arpent, and the canes were always small compared to other parts of the field; this season it was the reverse for both stand and size, and the ratoons promise unusually well. With guano, I feel convinced, no rotation of crop is required to produce the finest and heaviest canes in Louisiana. The canes with guano near each row were comparatively the best, and ripened earlier.

My corn-field produced on an average twenty barrels to the arpent; the five arpents of guano corn, accurately measured, produced forty-five barrels to the arpent. The orchard had never produced but very poor fruit, and always gummy, with abundance of worms; with the guano it produced an unusually large crop of delicious peaches, free from gums and worms; and some very old pear-trees, which had never produced before, a few very fine pears.

ESTATE OF BROWN BROTHERS AND CO., PARISH ST. JAMES.—FRANK LAPIEE'S DIARY.

April 27, 1853.—*Guano on Plant Cane.*—Selected my worst cow-lands, in four different parts of the field, on which I never had been able to obtain a large cane and a good stand; opened furrows close to each row, six feet apart, put in a tract of guano, say one hundred and fifty pounds per arpent, covering the same by plough, in twenty-five arpents; had a good shower immediately after.

June 3, 1853.—On this day no difference perceivable; added one hundred and fifty pounds of guano per arpent.

June 16, 1853.—Difference between the guano canes and the other plants in the field quite apparent, being of a deep green, and fully one foot higher than all other canes.

August 1, 1853.—Never saw a heavier stand and higher canes in this State than the guano canes on this day.

October 26, 1853.—Guano canes all laid down flat by their heaviness, and rains.

December 15, 1853.—Ground five arpents of the above canes, which weighed ten beaume, whilst other canes in the field only weighed eight and a half. These produced two thousand pounds to the arpent of refined sugars. Bad weather, and the twisted condition of the canes laid down, prevented my ascertaining accurately the yield of the balance of the twenty-five arpents.

June 16, 1853.—*Ratoons.*—Applied, as an experiment, two hundred pounds guano to two arpents of inferior ratoons; rain came on immediately after.

Note.—These ratoons soon afterward shot out rapidly, and produced double the quantity of canes of other ratoons in the same piece, and double the size.

March 16, 1854.—The guano ratoons have already a full stand, and are comparatively the finest in the field, so much so that I am preparing to apply some guano to as large a portion of the ratoons as I may be permitted to do.

GRAND NATIONAL CATTLE SHOW.

In our July issue we published a circular, calling the attention of the country to this great and important meeting, signed by the gentlemen of the "Local Executive Committeee." We have since received another from Hon. M. P. Wilder, President of the National Society, with a note inviting us to give it publicity. We do this, of course, with great pleasure, and by thus repeating the announcement, which, in both instances, though varied, is still official, we may perhaps induce a more general attention to the call. We have no doubt it will be such an assemblage as has rarely been witnessed in this country.

UNITED STATES AGRICULTURAL SOCIETY.

At a meeting of the Executive Committee of the United States Agricultural Society, held in the City of Washington in February last, it was resolved that the Society would hold no exhibition in any State having a State Agricultural Society without the assent of the officers, or of the Executive Committee of such Society.

The citizens of Springfield, Ohio, having requested this Society to hold an Exhibition at that place during the current year, and generously subscribed about *ten thousand dollars* to defray all the expenses of the same, and to guarantee the Society against loss, and the Executive Committee of the Ohio Agricultural Society uniting in the request, the Executive Committee of this Society have concluded to hold a National Show of Cattle, open to general competition, without sectional limit, on the 25th, 26th, and 27th days of October next, at Springfield, in the State of Ohio.

The friends of agriculture in all the States of the American Union, and in the neighboring provinces of Canada, are invited to coöperate with us, so that this exhibition may be the more extensively useful, and alike creditable to the generous citizens of Springfield, with whom it originated, to the contributors

and visitors who sustain it, and to the United States Agricultural Society, who are so deeply interested in its success.

In consequence of the holding of this Show of Cattle, the contemplated Exhibition of Horses at Springfield, Mass., and the Show of Sheep in Vermont, will be omitted.

The Journal of the Society, which the Executive Committee have concluded to issue once in each year—four numbers in one—will appear in January next; and will contain the Transactions of the Society at its last annual meeting, the lectures and addresses delivered at that time, a full and faithful account of the Springfield Show, with other valuable papers, by eminent members. This volume will be forwarded to all members who have paid their annual assessments for the year 1854.

MARSHALL P. WILDER, President.

WILLIAM S. KING, Secretary.

Boston, August 1, 1854.

MISSISSIPPI AN AGRICULTURAL STATE.

MR. LIEBER, late geologist in Mississippi, believes that Mississippi must always be "essentially an agricultural State." In this he is no doubt correct. But at the same time we see no reason why a variety of mechanical employments may not be introduced, giving labor to thousands who would settle among them, and eat those grains and wear the wool, and consume many others of the productions of the State, and bear their proportion of the burdens of taxes, while they manufactured the shoes, etc., which all the people demand. Show us the community that can be said to flourish, in the highest sense of that term, without such a variety of interest. But we allow Mr. Lieber to speak for himself in the following extract from his report:

"Mississippi will never be essentially other than an agricultural State, and as such it takes precedence over most other States of the Union, and produces in various places a greater amount of cotton than can ever be made in older States. The richest soil is undoubtedly the alluvium. But of it we have two varieties, as already mentioned, an older and a newer one. The former is of a more bluish color, while the latter is of a deep chocolate brown, and for agricultural purposes the best. This, as a rule, is found nearer the river than the former. Next in value, as arable land, we have some of the superficial deposits above the tertiary—as near Vicksburg; but the surface consists of small but very abrupt hills, so that the soil soon washes away. The original growth is cane, pecan, and ash. At one time this region was very popular for planting cotton, but now the swamp is naturally preferred. The cretaceous formation ranks next as a fine soil-giving rock. The prairies are distinguished by two appellations, relating to their character of soil and native vegetation—the bald and the post-oak prairies. The former very frequently contain too much lime to afford the best growth for cotton or corn. The latter is always good for these purposes. The *quercus obtusiloba* is almost the only tree found upon these lands. The greater portion of the soils which owe their origin to the tertiary deposits, with the exception of those in the neighborhood of Vicksburg, can only claim mediocrity, as the soil is very thin, and, though very fair in itself, is soon transferred from its original position, if not worn out while still remaining there, and is then carried away to the river-bottoms and hammock-lands. The latter result has been materially

hastened by injudicious tillage. A great portion of the tertiary—almost the whole south-eastern part, as well as that in the north-east—consists of heavy beds of sand, which can produce but little, and can scarcely be said to enjoy any cultivation at all; for the facility of acquiring more valuable lands is still sufficiently great to enable those who can at all afford to move to leave these barren pine lands. In the counties of Tishamingo and Itawamba—except where the cretaceous rocks appear—we meet with perhaps the poorest land that can be found in the State, as may be inferred from the fact, that United States land may still be bought there for 12½ cents per acre."

GREASE, OR SCRATCHES.

Grease, or what is more generally known in the United States as *scratches*, which we look upon as a mild form of grease, is a disease of frequent occurrence. It probably originates, like many other cutaneous affections, in a foul habit of body—a retention of morbific materials in the system, or, more properly speaking, in the extreme vessels. The disease is most prevalent in the cold months, for then the function of the skin is more or less interrupted; the insensible perspiration, being neither so regular nor profuse as in the warm months, naturally leads to an accumulation of excrementitious agents. The heels of a horse, like the axilla (armpit) of man, are furnished with a large number of cutaneous exhalants, or secreting glands; and when the animal is in a state of health, the moisture, if it may be so termed, keeps the parts soft and pliant, lubricates the surface, and protects it from irritation. But when this humor of transpiration is not evaporated, in consequence of an accumulation of filth about the parts, or from the influence of cold, it appears at the surface of the skin in layers or incrustations. Now these incrustations may be the effect of a too copious discharge of excretory matter, which is perceptible in the inverse ratio to that of the kidneys and lungs. Variations in temperature check the cutaneous exhalation; and the reason why the heels are so often attacked with scratches is, because they are exposed to currents of cold air, are often covered with filth and wet, and chilled by a slow process of evaporation.

Mr. Percivall says, in his Lectures, "The etiology of grease throws considerable light upon its veritable nature. Horses who are at pasture or in straw-yards—in situations, in fact, where heat and cold are not naturally, and can not be made artificially, suddenly operative on the heels—rarely have grease. Those that have grease, in stables, are mostly coach and cart-horses, with thick, fleshy heels, and white legs, who are subject to get their heels wet, and do not commonly have such pains bestowed upon them to dry their legs as hackneys, hunters, and racers have; indeed, among the latter, grease is a very uncommon disease. Such horses also stand in stables hot and filthy from dung and urine, the very exhalations from the litter of which proves an additional excitement. Grease formerly made great ravages in the English cavalry and ordnance service; whereas at the present day the disease is scarcely known. This change for the better is ascribed to three causes—to the proper ventilation of the stables, the greater attention paid to grooming, and to the presence of a veterinary surgeon, who checks at the onset such casual occurrence.

Sainbel, who wrote An Essay on Grease, for which he was presented with

a prize by the Royal Society of Medicine in France, thus commences his paper: 'The grease is in general a cutaneous *chronic* affection, sometimes inflammatory, sometimes infectious; and I have known it contagious; it invades the legs of horses, asses, and mules, but seldom attacks those of the ruminating species.' We are told that cow-pock had its origin in the transfer of the matter of grease from the heel of the horse to the teat of the cow; and that the disease may be communicated to the human subject by inoculation with this matter, the same as with that taken from the ulcerated teat of the cow: some have gone further than this, and said that glanders and farcy could be generated in this way. The accounts of these strange transactions, however, have made but little impression, for we hear nothing of them now-a-days, and this is not a very bad criterion of their want of truth and foundation altogether. I have heard Professor Coleman say that there never was a well-authenticated case of cow-pock being produced from grease; and I verily believe myself—though I do not know that the fact has been satisfactorily experimented on—that there is no truth of its being communicable among horses. In certain seasons and situations, the disease is certainly sporadic, (affecting a few at any time or season;) but, then, the causes are too manifestly operative among horses under the same circumstances to refer its production to infection or contagion.

The symptoms of grease, in its simplest form, are, an exudation of a greasy, offensive matter from the skin covering and surrounding the heel, attended with preternatural heat, redness, tenderness, and occasionally general tumor of the heel and fetlock. Soreness or lameness on first leaving the stable is commonly perceptible, though it is seldom in sufficient degree to call attention to the disorder. And here I may remark, that the presence of grease is a pretty infallible test of negligent grooming; for, as may be inferred from this exposition of its nature and causes, a horse whose heels are kept dry and clean, and never suffered to grow dry of themselves, after having become wet, will be in little danger of contracting grease. Should the diseased action not be corrected, the inflammation extends up the leg, which, in consequence, swells, grows warm, and tender on pressure; so great, indeed, is the morbid sensibility of the heel, often, in this stage, that, if the part but be touched, the animal instantly catches his foot off the ground, evincing considerable pain. The greasy issue, by this time augmented in quantity, stands in large drops among the hairs, which show an inclination around the front of the heel to become bristly. No affection causes more pain or soreness on motion than grease; the heel itself being so very movable and sensitive a part. When both hind-legs are violently affected, the animal is often so lame that, when at first taken out, he can but with great awkwardness—evidently from excessive soreness felt, particularly in extending the heel—even walk at all: after he has walked for some time, however, this soreness diminishes greatly, or entirely leaves him, and he will trot with apparent freedom: this accounts for the many greasy horses we see in constant use.

. . . Pustules arise in various places, mostly around the upper and back part of the heel; these burst, and expose a raw surface, from which granulations arise in clusters, resembling (as Sainbel happily expresses it) 'the outward coat of a pine-apple:' these pustular excrescences are called by our farriers *grapes*."

Mr. Percivall continues to trace the disease to its more inveterate termination, and finally comes to the most important part, its treatment, which, he observes, "will be very simple or complicated, according to the duration, stage, and virulence of the disease.

. . . Should the case be a mild one, augmented issue be the only ailment, some simple astringent application will be all that is required.

Powdered alum,
Bole Armenian,* } equal parts.

Or this:

Powdered charcoal,
Calamine,† } equal parts.

A powder is generally employed, after which I myself prefer the form of ointment,‡ and for this reason—that, as the astringent powder has a tendency to suppress the secretion, the discharge will, sooner or later, become arrested altogether; at which time, the heels being dry, the skin grows hard and contracted, and disposes to crack; all which, I conceive, is in a great measure prevented by the ointment, artificially smeared over the surface. Though I ordinarily use the powder, therefore, in the first instance, I substitute some mild astringent ointment so soon as the discharge has become suppressed. Should the legs swell, walking-exercise, twice a day, in a dry and clean place, will be beneficial, and a diuretic ball may be administered every other night.

But, in every case in which the heels are hot, tumefied, and tender—in other words, in which inflammation is very active—I have no hesitation in saying that we ought to mitigate it, in the first instance, by assuasive means before we think of employing astringents. Some recommend fomentations; but they are inconvenient applications, and possess no advantage over a common poultice. And, of all poultices, the bran poultice, from an absorbed property it possesses, is one of the best. Where there is much fetid discharge, however, and a degree of malignancy about the case, a poultice of charcoal is to be preferred. At the same time, purgation should be put in practice, low diet, and even in some cases the abstraction of a *little* blood from the thigh [of the *doctor* perhaps!] will be advisable. As soon as the inflammation has subsided, astringents may be employed; they will require, however, to be stronger than those used for slight cases,§ and they ought not merely to be smeared over the heels, but spread upon pledgets of tow, and kept applied, by means of bandages, for two, three, and even four days together, without taking the horse out of the stable; during which time it is a part of my practice to give a strong dose of purgative medicine; at all events, the bowels should be kept moved."

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* "*Bole Armenian*—bole Armenic; a pale but bright-red colored earth, which is occasionally mixed with honey, and applied to children's mouths when affected with aphthæ. It forms, like all argillaceous earths, a good tooth-powder when mixed with some aromatic."—*Hooper.*

† Carbonate of zinc; a mineral containing oxide of zinc and carbonic acid, united with a portion, and sometimes other substances. It abounds in clayey soils. The calamine of England is, by the best judges, allowed to be superior in quality to that of most other countries.

‡ Powdered alum, - - - 2 drachms.
Simple ointment, - - - 1 ounce.

Or,

Citrine ointment,
Simple " } - - - equal parts

§ Sulphate of copper, (blue vitriol,) 2 drachms.
Alum, - - - - 4 drachms.
Bole Armenian, - - - 1 ounce.

Reduce them to a fine powder, then add
Common oil, - - - 3 ounces.

If a very *strong* astringent is desirable, we should use bayberry-bark—a remedy that can be obtained at small cost in any part of the United States. We (and probably Mr. Percivall) might think that alum, one hundred parts of which contain thirty-four of sulphuric acid, and which Dr. Hooper defines as a *powerful astringent*, is also an efficient escharotic for the most malignant cases, without resorting to that which destroys the living principle. Verdigris, *one of the ingredients of the Green Mountain salve*, sulphate, and other preparations of copper, act as virulent poisons, when introduced in very small quantities into the stomachs of animals. A few grains are sufficient for this effect. Death is commonly preceded by very decided nervous disorders, such as convulsive movements, tetanus, general insensibility, or a palsy of the extremities.

In Hooper's Dictionary we are informed that "the poison of copper is absorbed, and, through the circulation, acts on the brain and nerves of man. The preparations of copper are no doubt very acrid, and if death do not follow their immediate impression on the sentient system, they will certainly inflame the intestinal canal. The symptoms produced by a dangerous dose of copper are exactly similar to those which are enumerated under arsenic, only the taste of copper is strongly felt."

Some of our readers may desire to know how copper, and indeed other poisons, are diffused through the system when applied to sores. We answer, by absorption; which takes place with great facility on the surface of the sores; so that a portion of copper, received into the system in this way, will produce the same results as when introduced by the stomach.

Let us, then, reject the preparations of copper, and resort to less dangerous articles.

Mr. Percivall proceeds to recommend attention to diet and ventilation, and relates *an inveterate* case of chronic malignant grease; but as we seldom have such cases in the United States, this portion has been omitted. We can not, however, but admire the man who, in that early period of the history of our art, should recommend such a simple and, comparatively speaking, sanative system of medication. For let it be remembered that in those times the most inhuman atrocities were perpetrated on the bodies of uncomplaining brutes, and the most destructive poisons were called into requisition, to fill up the measure of their woes; for the law of humanity was then a dead letter, and every man did as he pleased. Contrast the treatment recommended by this distinguished surgeon with that of others whose chief agents for the cure of grease are *corrosive sublimate, muriatic acid, antimony, lead*, and we are led to exclaim, that a humane surgeon is more to be admired than the hero of a hundred battles.

In conclusion, we remark that scratches, which we have just defined as a mild form of grease, have been unusually prevalent in the New-England States during the past year. We have been called upon to prescribe for and treat a greater proportion of cases than in any previous year during our residence in Boston; the subjects of which disease, in a great majority of cases, were in a plethoric state. In short, there was an evident disproportion between the daily allowance of food and the amount of labor exacted. As regards the result of our treatment, some of the cases yielded readiy to local application alone, while others were more protracted, and required active general treatment—a purification of the fluids and a restoration of the healthy secretions.

The application which gave the greatest satisfaction was,

Pyroligneous acid, - - -	1 pint.
Linseed oil, - - - -	½ pint.
Sulphur, - - - -	1 ounce.
Bayberry-bark, powdered, - - -	1 ounce.

This was applied, by means of a sponge, every morning; at night the parts were washed with soft soap and warm water, then wiped dry, and the application again repeated.—*Dr. Dadd's Veter. Jour.*

WHEAT

To the Editor of the Plymouth (Eng.) Herald:

Sir: Having had an opportunity the summer before last of visiting some of the best-cultivated farms in this country, (probably in the world,) there was one, that of the Rev. Mr. Huxtable, near Shaftesbury, that had a remarkable feature—*great heaps of dung* lying about, which the respected proprietor said *he hardly knew what to do with*, as the land had already become so rich that the wheat fell down in wet weather. Yet this farm grows wheat every other year; that is to say, it is nearly one half in wheat, yielding about five quarters an acre; equal to two and a half quarters, or ten bags, per acre *per annum*. Now compare this with our Devonshire produce, which, I think, will average very little above ten bags of wheat per acre *once in five years*. If so, Mr. Huxtable's farm produces *five times* as much wheat as our average; and yet has increased in richness so much that he has actually a superfluity of manure. It must be interesting to our farmers to know how this was effected.

EXTRAORDINARY AND RAPID INCREASE OF PRODUCE.

The farm is about ninety-five acres; when he took it, a dairy farm, with only ten acres arable; carrying 14 dairy cows, growing 48 bushels of wheat and 40 bushels of beans, and employing three to four hands. It now produces 1600 bushels of wheat yearly; fattens 40 head of cattle, (including calves;) 100 sheep and 80 pigs; and keeps twelve laborers at work the year round. And this change was quickly made. Five years since, when many husbandmen were out of work, he ploughed up the land for the purpose of giving them employment; drained it, levelled the hedges, (all but the boundary,) and pared and burned the surface, and then tried how much stock he could keep, to raise the land to the highest fertility. After many contrivances, he found that by flooring his cattle and sheep-houses with boards, set a little apart to let the liquid drain between, (into a tank,) they needed no litter; and being thus independent of straw, except for the stables, he might keep as many cattle and sheep as he could feed; in fact, the straw saved from litter helped to make out the food. And beside the green crops and straw, he bought linseed cake, which, while it quickened the fattening of his cattle, improved the quality of his dung. And by this means he brought his farm in three years into the high condition above-stated. The liquid manure drained into the tank is pumped up to water the rye-grass, and enable it to be cut four or five times a year; yielding altogether about fifty tons per acre, weighed green; equal to ten or twelve tons of hay!

MANAGEMENT OF MANURE.

But there is an ingenious peculiarity in his management of the dung. During the summer he turns up a good deal of the clay subsoil, and burns it in heaps slowly, so as to be just charred, quite crumbly, and as light as possible. This he spreads out, when extinguished, under long rough sheds, (run up by his own laborers,) and upon it a layer of the drained dung, (free from straw, as before said;) then a second layer of burnt-clay, and another of dung, and so on alternately. As there are several of these sheds, there is time for the burnt-clay to absorb the rich drainings of the dung, and for the mere moisture to evaporate, before the next year comes on; so that, with proper turning over, it gradually becomes quite crumbly, and fit to spread out *broadcast*, and turn under like lime and ashes; and thus to mix so thoroughly with the soil as in fact to become a part of it; and its effect is proportionately quick and productive. And the estate now produces, as above-said, more manure than it consumes.

This is not mere scientific speculation. Here we have the actual produce of ninety-five acres, raised in three years from 48 bushels of wheat and 40 ditto of beans, to 1600 bushels of wheat; and from 14 dairy-cows with their calves, cheese, and butter, to 40 head of fat cattle, 100 fat sheep, and 80 fat pigs; so that, if even one quarter of our tillage-land was brought to this condition, our wheat produce would be doubled; we should be exporters instead of importers, and all our husbandmen would be in full employ.

But it will be objected that such a result requires not only skill and exertion, but a large capital and heavy expense of labor. This is true; but not really an objection. There is, in fact, no more objectionable practice than the too common one of taking more land than we have capital for. If the soil is half-starved and half-tilled, it will return only half-crops, and the farmer who entered worth little, will come out worth nothing—as hundreds can testify And on the article of *labor*, Mr. Huxtable's object was not to see how much labor he could *save*, but how much he could *use* to advantage; that is, not only how much produce he could draw per acre, but how many hands his ninety-five acres would profitably employ; and gratefully do those acres repay his attention, while he is still better rewarded by the prosperity of the laborers in his parish.

The increase of his produce, and the management of his dung, are well worth our farmers' consideration. If they would be content to take no more land than they can afford to work properly, they would have less anxiety and more comfort; and the land and the country would advance in produce and prosperity. Yours, sir, etc., ———.

FLAX CULTURE.

We give a portion of another very valuable essay on the preparation of hemp for naval purposes. That portion only is selected which treats of its cultivation:

"All sod-land designed for hemp should be ploughed in the fall. Land that has been in hemp the previous year should be broken the first spell of weather in the spring when the ground is dry enough to crumple up well. It should be made a maxim, in working land, never to plough or otherwise stir it, when too wet to pulverize well.

Timothy-seed, unless ploughed early in the fall, can but rarely be relied upon for a good crop of hemp; even then less reliable than clover-seed, and still less so than blue-grass sod. It is a good plan, the first year after breaking Timothy or clover sod, to cultivate it in corn; this, if done neatly, will always, of a fair season, insure a good crop of hemp the next year, and possibly three or four successive crops, depending much upon the quality of the soil and neatness of cultivation.

In dry weather, previous to the season of planting the crop, the land should be harrowed well; sod-land, until the sod is well torn to pieces; other than sod-land, well levelled, and, if not perfectly clear of clods, this is the time for a heavy roller. Plough, harrow, and roll until the ground is perfectly pulverized. Prepare the ground before the seed is sown; do this work well, if it is expected that the land will yield good crops and continue productive.

Immediately before sowing, the ground should again be well stirred by the plough; not permitting it to cut too much land, but, in farming *parlance*, plough close and deep; level with the harrow and use the roller again at this time, if the soil is not well pulverized. After this, except upon loose sod-land, the roller should be laid aside. Sow the seed upon this levelled surface at the rate of a bushel to a bushel and a peck to the acre, the larger quantity upon rich, fresh land, the smaller upon the less lively. I have sown nearly all quantities from three pecks to three bushels per acre, and believe the quantity above given to be best adapted to the purposes in view.

After the seed is sown, the harrow should be passed over the land both ways, that is, harrow and cross-harrow; and if the previous work has been well done, the land, unless it is sod that is not well rotted, is now level enough for all purposes, and much less likely to run together from heavy rains than when the roller is made to finish the work. This closing the work with the roller has always appeared to me to be an attempt to put a finish to the surface to hide imperfections that exist beneath. There is, in my estimation, a vital objection to finishing the planting of this crop with the roller. If it is to grow vigorously, it is essential that atmospheric air should penetrate the ground freely; this the roller certainly obstructs to a material extent. Unrolled sod-land is not subject to this objection. I fear that most farmers are not sufficiently impressed with the importance of so preparing their land for crops that there may be a free circulation of air in the soil, to the greatest possible depth." * * * *

RAISING FRUIT-TREES.

This is one of the most important of the farmer's duties, and one in the execution of which he can rely but little on the experience of the generations which, in this country, have been before him.

As to the value of fruit-trees, as a source of profitable income, all doubt has long since vanished. Fruit in great varieties may be profitably raised for home consumption, and the market is always open and seldom refuses a paying profit. A single orchard may fail—or a single variety of fruit—but this luxury the people will have, let it cost what it may. Apples, pears, quinces, plums, gooseberries, peaches, blackberries, cherries, grapes, and even walnuts, always find a market.

We know that orchards deteriorate, but still apple-trees live quite as long

as their owner. Fruits deteriorate. But this process is very slow, and new varieties take the place of those run out. The Newtown pippin has been a standard fruit for one hundred and fifty years, and is now as good as ever. The Baldwin apple has stood among the first varieties for more than one hundred years. If we are not mistaken, some of the earlier trees of these kinds are still in bearing. One pear-tree, at least, is known, which is over two hundred years old—the Endicott pear-tree, in Massachusetts; and we are told by Mr. Proctor, that another, eighty years old, has recently made twelve or eighteen inches of wood in a season. The golden pippin was commended as early as 1660, and has ever since retained its high rank.

Surely this is sufficiently "permanent" for a generation found to extend only to thirty years.

But beside well-known fruits, new varieties may be produced of equal value, and this department need be limited among scientific fruit-growers no more than the care of an old orchard Indeed, the latter needs more science than the originating of new fruit. There is no magic known only to a few, which will ever tend, in these experiments, to insure peculiar success.

Plant your nurseries, grow your trees, and try your chance among the rest. One new valuable fruit will pay for fifty failures.

CULTIVATION—WHAT IS IT?

SCRAPING, PRUNING, MOWING, PLOUGHING, ETC.

THIS is a great question. On its successful investigation depends all the farmer's success, and yet no question has received, perhaps, more various replies. Theories are piled on theories, till the plain working farmer is bewildered, and surrenders often all his confidence in any man's wisdom, whenever it goes beyond what his own eyes have seen and even his own sturdy muscles have actually wrought out. And after all the *science* expended on this subject, this doubting man is a prudent man. The probability is that the learned professor is mistaken—for a large majority of what has been written in the name of science was false, and is, sooner or later, almost universally discarded. We do not mean that the facts stated were fictitious, that the "wonderful crop" was not raised, and raised in the manner described. But the whole story was not told, and the theory founded on it and the instructions given in consequence of these supposed discoveries, were all fiction—mere idle dreaming. Important truths were entirely overlooked, perhaps unknown, and the influence of known facts quite erroneously estimated. The grand cause of failure or success is not understood.

Sometimes these mistakes in theories are harmless, or nearly so. For example: The question, "Whence do plants obtain their nitrogen?" discussed so learnedly by very learned men, and sometimes very acrimoniously by very ardent men, who ever solved this question so as to leave him unconcerned whether the soil was rich or sterile? If all the ammonia comes from the air, it is still true that the soil must convey much of it to the plant, and the requisites for this comprise all that is included in a fertile soil. Such cases, however, are very rare, and error should never be assumed as harmless. The rule is, ERROR IS DANGEROUS.

Just instruct your agricultural community in all the fundamental truths of germination, nourishment, and growth, etc., they will be as good farmers as they can afford to be; or as our venerable friend Col. Skinner used to say, show a farmer where, without any uncertainty, he can always sell a well-fatted hog at a handsome profit, and he will soon find out the most economical way of doing it. And this, by the way, is the key to OUR theory, (and his,) that the way to improve agriculture is to encourage all forms of American industry, and thus create a market always sure and always at hand.

We love to recur to *first principles*. We are perhaps peculiar for our jealousy of every thing that, in practice, seems to violate these principles. Now let us test some recommendations of learned men and truly practical men, by this method.

1. The order of nature is the best, and usually the only sure and permanent one, for accomplishing any one of nature's achievements; at any rate, *you can not* IMPROVE *it*. Now go into the forests. Trees grow and decay. Plants spring up, and bear flowers and fruit, and die. What these organisms secure from the earth and air, gives permanent fertility to the soil. Eventually, if not from the beginning, under ordinary circumstances, the plant will be found in its best condition, though there may be exceptions. Its rule of the natural growth is to adapt and harmonize all its conditions. The exceptions are accidents.

Now what does nature do in this great laboratory? She furnishes decayed vegetable matter—her own flesh and blood and bones. She lops off dead branches and those too ponderable to be sustained, even at some peril to its own permanence; it adapts its dimensions, horizontal or upward, to its relative circumstances; it finally drops its seed, that sprouts again, or its fruit, not always or often on the surface of a dry dusty soil, but in the rich mass of decaying vegetation, or of that green growth which at once shelters and by and by nourishes it. We need not extend this summary. The reader may do so as occasion requires it.

Now test by these simple facts, any given operation in agriculture.

Moderate pruning (not a promiscuous cutting and slashing) has found its precedent in the workings of One wiser than man. MULCHING and MANURING are seen to be "by authority." Scattering seed broadcast upon certain soils is the true, the actual security for unbroken successions of seed-time and harvest. The dying animal is sheltered under green branches, and repays the service by furnishing to the plant the elements of its increase in their most active forms.

But who *scrapes* the trees of the wilderness and the grove? Who goes about tearing off the skin or the clothing of any vegetable thing, except as a destroyer? Who changes the whole aspect of this beautiful world by daubing it with white-washes, or yellow washes, or washes of any other artificial hue?

It seems to us that the Creator was but partially instructed in the *science* of agriculture, or else failed to finish what was so well begun, or else some of our teachers are utterly and fundamentally in error.

Are we asked, Where is the propriety of ploughing taught in this book of yours? We reply, in the mellow soil beneath every vigorous natural growth. The whole world is not a garden without culture, and never will be. Had it been so, how much value would have been destroyed by the myriads of men who have dug out the solid walls of temples, and castles, and pyramids, and the vastly greater supplies requisite for our own and our father's homes! What waste it would have been to have made a garden which must

be turned into a mine before a single permanent habitation could be built! But we will not go in chase of cavils; nor tax ingenuity for exceptions. The general truth must be as we have stated. Much of the barrenness and unyielding condition of our soil is man's own work. He creates his own necessities.

In some issue of the last year, we expressed views very concisely, kindred to those above given, and continued reflection and observation confirm us in our position. We were, therefore, well pleased to see, some time since, sundry resolutions of the *Massachusetts Horticultural Society*, which, if it does not embody "all the talents," its catalogue contains the names of gentlemen practically and theoretically wiser, more learned, and more successful in this department, than any other Society we have ever known, and its board of directors, when it gives an unbiased vote, is worthy of more confidence than that of any other within our knowledge. These resolutions indirectly and partially inculcate the doctrine we have here advocated. For example: They say that lichens or mosses are not the *causes* but the *consequences* of disease and decay, and that the habit of scraping the tree, thus conditioned, is positively injurious; that if insects which are injurious to the tree, are known to exist on a given surface, they should be removed by gentle rubbing with a stiff brush, by washing, etc., and that "alkaline washes" are injurious. We say amen to all this.

It is curious to note the differences between the notions that prevail in *vegetable* and *animal* physiology. In the latter, it is frequent washing in pure water, the utter disuse of all cosmetics, and even of soaps, which is so urgently taught. Nor are these views new. They have long been known and practised. On the other hand those who use washes and powders soon reduce their skins to a condition in which it does not in fact look fit to be presented in company, and the evil is, it is constantly growing worse, and they will be too ugly, if they live to be old, for even paint to save them.

Why should not the analogy hold good between these different organisms, the animal and vegetable? Why do violence to the skin of the tree? Why fill its pores with any foreign substance?

Of course we do not allude to remedial operations. Our topic is culture and not cure. When diseased, plants and animals may, in extreme cases, require a thorough coating of poison, for aught we know, though we are not now aware of any such case. We do not see why an active plant should be treated as if diseased because here and there abnormal symptoms are discovered.

Most of the enemies of fruit are insects, and these modes of practice form a very inefficient protective against a good pair of wings.

Certain practices are resorted to by florists and others for producing elegant flowers, which are artificial in every sense of the term. They are efficient, and for aught we know very proper. But the reason is that the gardener wishes to produce something that nature never attempted. If one has a desire for new hybrids, or "monstrous" developments of petals, etc., as the botanists would correctly describe them, the course of practice is plain for him. This is easily accomplished. But all such operations are abnormal, and most of them are attended with more or less danger to the permanence of the plant. Florists generally secure elegant flowers at the certain cost of the premature decay of the plant itself, and their whole course of practice consists very much in devising expedients for frequent succession as a substitute for permanent growth. Plants purchased of "scientific gardeners," seldom do well under ordinary cultivation. An apple may be grown much larger than the natural size, by nipping off a good portion of fruit-buds on

the same growth, but we do not believe that *more fruit* is actually secured by any such process. A tree may put forth its buds under unnatural, excessive excitement, and become unable, afterward, to mature what was thus forced in its early developments, and then nipping the buds may be desirable. For even inanimate nature sometimes does her most under unnatural excitement. But this is a remedial process, and should not be confounded with those general principles of culture and those every-day requisitions of a healthy growth.

Weeding is necessary for securing a good crop, on the same principle one would nip off half the buds of his apple-tree. The farmer would concentrate all the energies of his land on a given growth.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

STEAM-CARRIAGES AND THEIR ENEMIES

BY J. K. FISHER.

I HAVE been told, by engineers and others whose judgment I esteem, that although the mechanical difficulties of steam-carriages are such as can be entirely overcome, there are others which can not so easily be dealt with. Among these are the adverse interests and prejudices of men, especially men who are grossly ignorant: they begin by scoffing at theory, as unworthy of the least respect, and end by putting forth their own crude notions, and claiming for them implicit belief. And beside these opponents, there will for a time be the difficulties arising from that roughness in roads which is deemed necessary to fit them for the traction of horses.

Chief among the worst opponents are those whose interests, prejudices, and conceit blind them in all directions, and whose subsistence is drawn from the payments made by inventors for their supposed influence in the Patent-Office and in the estimation of the public. These pretenders will praise all inventions, however bad, whose authors employ them as their agents, or pay them for puffing and advertising; and they will condemn, without the slightest regard to truth, all they dare to condemn, whose authors do not pay them *black mail*.

But these discouragements, I have replied, should not deter one from attempting what he knows to be feasible, and is sure to be useful when once established. It is moral cowardice to shrink from dangers not yet present, and from which one could not shrink without disgrace if they were present. If the vulgar leeches who can not bleed you will certainly avenge their disappointment by slandering you, must you therefore shrink from your task, and thus be in a measure their slave?

The sense of interest is often falsely alarmed, and assumes a hostile attitude, when, if enlightened, it would be friendly. It was a false alarm that made some of the English road-trustees hostile to steam-carriages. But this alarm was not without a foundation in "incontrovertible facts," which I shall here state and explain, as a matter of prudence; for the false notions that arose from them yet prevail.

Hence, while it is a part of manliness to advance, in defiance of obstacles, it is but prudent to deprive them of their power, if that may be done, by showing the causes of former ill success. I therefore avail myself of your

invitation to review what has been done on this subject—to find where we already stand, as a ground from which to view what is yet before us.

In 1804, Richard Trevithick built a steam-carriage, which, while it worked so efficiently as to demonstrate the power of steam to work effectively on roads, was accounted impracticable, in consequence of a slipping of the wheels; and the general conclusion of the engineers and the public was, that, in difficult situations, the wheels would turn round without moving the carriage forward. Even Trevithick himself did not discover the means at his hand to obviate this difficulty; and he confirmed the opinion by proposing, in his specification, to put spurs into his tires, to prevent slipping.

As a means of overcoming this difficulty, Brunton invented an imitation of horses' legs and feet; and after him, in 1824–5, David Gordon and Gurney invented improved legs and feet. Gordon's feet resembled scrubbing-brushes, bristled with spikes. Gurney's were not much better, as to their effect upon the road. Both were tried, and the trustees saw that they tore up the road far more than horses' feet did.

It is singular that men of talent did not at a glance see that one of these feet, which was pressed down with a comparatively small force, would be more likely to slip than the wheel, which is pressed down with the whole weight upon it, in addition to its own weight. These feet did slip, and scratch and tear up the surface; and beside this, there was a mechanical difficulty in working them.

Here, then, was this dilemma: "the wheels can not be made to propel the carriage; and the legs won't do, because they destroy the road: steam-carriages therefore won't do, anyhow." This view once established, it was a work of time to correct it. And before it was corrected, the road-trustees succeeded in getting upward of fifty toll-bills passed, for roads on which it was supposed steam-carriages would run, all of them imposing tolls that were prohibitory, or nearly so. There was a universal panic among road-trustees, about 1830, when these dreaded steam-carriages were declared to have become so perfect as to be able to run with profit; and large capitals were being subscribed to work them. A liberal man, of some wealth, Sir Charles Dance, purchased of Gurney three carriages, and placed them on the road between Gloucester and Cheltenham. All the jockeys and bigots, from the first, opposed them in every possible way. The trustees got a toll-bill passed, and put upon the road such heaps of broken stones, that horse-coaches were stopped by them; and a steam-carriage, though it ran over them several times, had its axle broken. It did not avail that the legs had been thrown away, and that the wheels did not slip: the invention had got a bad name, and time was required for it to establish a good one.

It is instructive to observe the origin and growth of this erroneous notion that wheels will not impel carriages. Trevithick did not foresee the least difficulty of the kind, and built his carriage with one engine instead of two, each of half power. And he did not see that letting on steam suddenly would cause more slipping than if it were let on through a throttled opening, or wire-drawn. His steam was got up to a full pressure, and let on through a wide opening; and the wheels slipped round, without getting the carriage out of the soft place in which it happened to stand. The spectators, among whom was Gurney, then a boy, went away with a new idea in their heads, which they held for twenty-three years.

You may now often see a locomotive draw eighty times its own weight behind it, and not slip its wheels. Yet you may see the same locomotive, with nothing but its tender, slip its wheels at starting, when managed by

an inexpert person. You often see the wheels slip and whirl round when a locomotive is starting a heavy train; and you then observe streams of sand running from pipes to the rails, and men pushing the train. In a minute all is right. Now if an ignorant person, who had never before seen a locomotive, nor heard of its "practicability," were to attempt to start such a train, he would probably work until he was hungry, and then give it up, and for the rest of his life declaim against all who should propose to use locomotives without legs, toothed rails, or gearing all the wheels together, or in some way providing against the "incontrovertible fact" that wheels will slip.

Gurney, after much trouble with his legs, happened to ask himself whether the wheels would not *help* to impel, nay, perhaps, do all the work on gentle descents, or even on a level; and he recollected that Trevithick's carriage was said to have run—perhaps without spurs. So he contrived a combination. He made a cranked axle, and made his engines turn his wheels, as is now done; and, in order to be secure against slipping, he put small legs upon the rims of his wheels, all around. Great was his delight when "this carriage went up Highgate Hill, in 1826, and to Edgeware, also to Stanmore, and went up Stanmore Hill, and Brockley Hill, near Stanmore; and against all those hills the wheels never slipped, and the legs never came into action. After these experiments, the legs or propellers were entirely removed; and from further experiment it was found, by a peculiar application of the steam, (namely, by wire-drawing,) that the bite of one of the hind-wheels was sufficient for all common purposes. If the steam was let on suddenly, the wheel would turn round, and the carriage not go forward; but when wire-drawn, one wheel was found sufficient."

By this experiment of Gurney's, we see that Trevithick, although he had one large cylinder, which is more likely, in the proportion of ten to seven, than two of half size, to slip the wheels, wanted only a delicate throttle-valve, and the knowledge of its use, to make his carriage run without slipping, if both wheels were fixed or clutched upon the axle. Thus the want of knowledge respecting a slight matter of detail, and the ignorance of a remedy for an evil that now exists, and is often troublesome to the ignorant, begot a prejudice that still pervades the minds of that great proportion of men whose habit is to doubt whatever they do not know, and to deny whatever they doubt. I am pestered with conceited bigots, who every day see locomotives draw fifty times their weight, and who yet gravely assure me that the wheels of a carriage will slip so that it can not get its own weight up a hill. In vain I point to the locomotive. "That," they reply, "is a different thing. If you can make a steam-carriage as heavy, you will then get adhesion, and you can go up-hill. But how can you get up with a light carriage? Nonsense! You see you are in this dilemma: If you are light, you slip; if you are heavy, you crush a common road; and you must therefore have rails."

Of course it is not to be expected that minds of the second order, much less those far below, will know by any means but sight of the solid reality and the actual fact. They can no more know by a process of reasoning, from facts already established, than they can see round a corner. And they rest as confidently upon their mere ignorance as a philosopher rests upon the conclusions he has logically drawn from established laws; and sneer at his "theories," while they are sometimes filled with dislike, and even hatred, for those who do not promptly believe the dictates of their blind egotism.

It may seem tedious to dwell upon this point; but in science, as in morality, people "perish for lack of knowledge;" and millions are wasted, and schemes fail that are within two dollars of success because men rest assured in their

ignorance, and do not ask if a remedy exists for the difficulty they encounter, nor *measure* and *weigh* the difficulty at all. The engineer who carefully looks at the drawing of Trevithick's steam-carriage, will say that, defective as it was, it would have run well if it had been provided with a good throttle-valve; and he will not doubt that the skill of that able engineer would have improved the invention, had he been furnished with means to introduce a number of carriages; and that the united talent of the country would in less than five years have made steam-carriages profitable.

These lions are now out of the path. What now hinders? More lions: always more lions; sometimes one at a time, sometimes several at a time—never less than one. Your ordinary man, when life is in peril, feels the impulse of honor and the dread of shame, and will march up to a battery of cannon; but when his gingerbread is in peril, the sense of honor and the dread of shame forsake him, and he says: "What if we should meet several lions? What if the omnibus men should run us down? What if a corrupt council should stop us, unless we pay them forty thousand dollars? What if a corrupt editor should demand black mail? My *dear* sir, you don't know the men you have to deal with! If we make money, we must share it with them. If we don't make money, they will hold us up to ridicule. No, no, my *dear* sir. I fear we shall be run down or used up some how by these leeches! We must wait for the good time coming." Such, in a concentrated form, without caricature or exaggeration, is what I hear from hundreds, who, when their higher sentiments are appealed to, would peril their lives, and give largely from their wealth. And such are the feeble yet victorious enemies who for fifty years have resisted the progress of an invention which the best engineers in the world have indorsed; and which, when introduced, will change the rough and dirty stone pavement to a smooth and clean iron floor.

It will be amusing, perhaps instructive, to read a description of one or two of the complex inventions to overcome this difficulty of slipping. It is probably to such contrivances, and their signal failures, and mischievous effects, and ludicrous and clumsy imitations of the perfect work of nature in the locomotive apparatus of animals, that we owe the rooted prejudice against steam-carriages. The name brings up a vague idea of complexity, expense, and a strange mechanical animal, afflicted with St. Vitus's dance, that may run over you, or run away with you.

Alexander Gordon (see "Treatise on Elemental Locomotion," p. 47) thus describes the inventions of David Gordon, his father. The first, patented in 1822, consisting of "a high-pressure engine, made after the pattern of Mr. Trevithick's, and having the wheels made with teeth, worked into a rack in the interior of a large rolling-drum, about nine feet in diameter, and five from end to end. The steam-engine climbed up the interior of the drum, like a turnspit dog or squirrel, and the large drum, rolling onward, drew a carriage." Two years ago, this invention, or one much like it, was actually built in Bridgeport, Conn. It does not appear that Gordon ever built it.

The next, patented in 1824, was "an arrangement by which an action similar to a horse's feet would be obtained. This was effected by six hollow iron legs, at the lower extremity of which there were feet to push upon the ground. These legs were connected by brasses, straps, and keys to the journals of an eight-throw crank, which was turned by a pair of steam-engines on the same shaft. This crank pushed out the legs backward, and the carriage ran forward. The legs were thus projected in succession, 2 following 1, and 3 following 2; then 4, 5, and 6 following in the same course, each

pushing the ground. By following this motion of the feet, it will be seen that they trotted round in an oval figure, which a line drawn through the figures would describe; this oval being formed of two diameters, one of the large crank, and the other of the small crank. The little crank lifted the feet off the ground as they finished their work. The crank-shafts were connected by a spindle, having on each end a mitre-wheel, to gear into a mitre-wheel on its respective shaft, so that the large and small crank-shafts revolved simultaneously, and parallel to each other. To prevent the feet bounding off the road, without taking hold and pushing the carriage forward, it was found necessary to use lifting-rods, which were hollow, each having a small solid rod in its interior, which was pressed out by a spiral spring in the hollow rod, so that these lifting-rods were lengthened when the feet got into a hollow, and shortened if the feet got on a stone or eminence."

The drawing of this carriage exhibits the larger shaft with ten cranks: two double cranks for the engines, six double cranks for the legs, and two single cranks for rods to connect it with the smaller shaft, which had two single cranks for the connecting-rods, and six double cranks for the lifting-rods; making fourteen double and four single cranks; and the mitre-wheels and spindle are left out—a variation which probably escaped the notice of the author.

This carriage is spoken of as if it were actually built. Alexander says: "I had found that the propelling feet do more injury to the roads than the propelling wheels." The editor of the *Scientific American*, who was a boy at the time, says that two carriages, "Gordon's improvement on that of Gurney's," ran in 1833, and that he rode upon one of them, and that they were well built, and had fair play; and yet failed to make as good time as two-horse stages. I find no account of such carriages in Alexander Gordon's work, published in 1834, nor is there the least notice of them in the *London Mechanics' Magazine* of that time, nor in *Hebert's Encylopædia*, published still later, nor in any other work I have seen. As his account of the failure tended to deter those who read it from investing in my enterprise, I called upon him, and asked him to show me the work in which I could find a full description of it. I also particularly asked him which Gordon planned the carriages. He told me, Alexander. This led me to accuse him of inventing a false account, to punish me for declining to pay the usual fee for having my invention described and advocated in that journal. But in his paper of August 5th, he charges me with a false statement, in saying that "Gordon never built a carriage." If he had recollected that he told me it was *Alexander*, or if he had observed that I said, "Having read Gordon's 'History of Locomotion,' published a year after the alleged failure of *his* carriages, and found no allusion to them in that," he would have seen my mistake, and been a little more gentle in his reproof. He is the only author I know who ever mentioned the event; and he himself misled me by his mistake in the name —Alexander for David. He should therefore not have been angry because I believed that he made up the account. If he deemed that I ought to have seen him before making the statement publicly, it might mitigate the blame; but I went several times to his employers, and asked to see him, and was refused, on the ground that my complaint was trifling, and his time was theirs.

Having made this apology for questioning the veracity and the motives of this arbiter of inventions, I must take the liberty to question his judgment, and dissent from his general conclusion, that because two carriages built on this plan failed to make as good time as two-horse stages, and failed to pay, no steam-carriages can be made to beat horses or to pay. As a boy, at the

time, he might have felt a patriotic admiration for the superiority of Gordon's carriage-legs over the legs that Gurney had given up six years before; and having made up his mind, it is not to be expected that he will ever change it, or trouble himself to read the evidence that proves, clearly enough, that carriages without legs have run at from twenty to thirty-five miles an hour, and worked at half the cost of horses, and would have been profitable had they not been subjected to outrageous tolls, and other opposition. His confidence that the genius of his countrymen could not fail where success was possible, is characteristic; but surely a Yankee, on the same ground, may be allowed to flatter *his* national vanity, by hoping that, if he "hangs on like a bull-dog to a *bare* bone"—if he does not let go in the day of small things—he may, after a while, get ahead of the great genius of Scotland, whose carriage-legs "trotted round in an oval figure," and adapted their length to the inequalities of the road.

Seriously, could I have supposed it possible that the *Scientific American* intended to say that such a totally unnecessary, however ingenious, apparatus as this system of legs, and a carriage propelled by them, was a fair criterion of the capabilities of steam-carriages? I never dreamed of his being such an egregious mechanical quack, until his own declaration that *David* Gordon was *the* Gordon. Even now I can scarcely credit it; but when forced to choose between the two horns of an unpleasant dilemma, I, if possible, prefer that which I would have others prefer if it were my case. A very good man might think highly of Gordon's carriage, and fancy that neither Gurney's, nor any other, could ever beat it; but to be suspected of being a mere tool for the collection of such taxes, would be to lose the esteem of every one who entertained the suspicion.

If the reader supposes that I am joking, I beg him to recollect what I just stated, that the other contrivance of David Gordon was actually built, within two years, in Bridgeport. Beside, about three years ago, a gentleman called on me, and told me he had just seen, in Paris, a steam-cab, which ran with legs; and the general ignorance on this subject is such, that it would be easier to get stock subscribed for such a carriage, than for one that might be deemed the *ne plus ultra* by engineers. I really do not deem it incredible that this editor is sincere.

The second plan of Gordon is not more absurd than the first; and it seems that France has furnished the crooked ingenuity to get up one similar to it; and I know many who are of opinion that hills can not be ascended by wheels alone. Such is the state of gross ignorance and obstinacy, and such the unbelief of testimony, that it is not believed, by many who daily see locomotives draw heavy trains, that light steam-carriages can go up-hill alone; and this is one of the reasons why the project is looked upon as impracticable. And this need not be wondered at in persons who do not pretend to have studied engineering, when we see the editor of a paper of such lofty pretensions as the *Scientific American* calling this carriage of David Gordon's an "improvement on those of Gurney," and considering its failure as a proof that steam-carriages never can pay. Thus it happens that the early and imperfect carriages are among the worst enemies of the invention, not because a single man of good sense would infer from the failure of early efforts that success can never be attained, but because impudent quacks, who attempt to teach the public, have not sense enough to study a subject before they write upon it. Well, this "improvement" is about equal to the plan of two ships hitched together, with endless chains going under their decks and over their masts,

and around their shafts, to turn their paddle-wheels by the power derived from the motion of the sea, which causes one vessel to go up while the other goes down, and the chain to trot round in an oval, or parabolic, or diabolic figure, and thus to give motion without the aid of steam. This plan the *Scientific American* has laid before the public, as something worthy of the celebrity its columns can confer. And this is the critic of inventions who calls my steam-carriage rickety.

In 1811, Blenkinsop, imagining that light locomotives would slip on rails, took out a patent for a rack to run beside the rails, in which a toothed wheel of the locomotive worked. Chapman, in 1812, patented a locomotive with eight wheels, all connected by gearing; and Stephenson, in 1815, built one with wheels connected by gearing chains. So not only the steam-carriage men, but also the railway men, have some queer fancies to answer for.

It may appear frivolous to notice these rattling complications; but the improvement of the steam-carriage has consisted chiefly in the removal of them. A few more remain to be noticed: these I have removed or omitted; and I find them as unnecessary as the legs. Gurney, Hancock, and others, deemed it necessary to leave the wheels loose upon the axle, and hold them by clutches, so that, in turning, one wheel would be unclutched. Without this arrangement, they found the steering-wheels would slip laterally, and the carriage could not be turned. It appeared to me that by putting the drivers near together, and the steering wheels forward, and by putting the weight well forward, the carriage could be made sure of turning, although both wheels are keyed upon the axle. I find that this is correct. I have not been troubled with the slipping of the steering-wheels, except when overloaded behind. For a drag, to draw other vehicles, this is the best arrangement; for a single carriage, which is required to turn short and frequently, it is sufficient to key one wheel. The clutches, and the trouble of using them, are therefore got rid of.

Beside the opposition that arose from the monstrous notions engendered by these monstrous contrivances, there were some that arose from the rivalry of the inventors and their partisans. The *London Mechanics' Magazine* was violent against Macerone, and he was excessive in his ridicule of Ogle. Gurney was opposed, at last, by the *Magazine*, because some of his friends wished to do for him more than they would do for other inventors. It is not unlikely that if all these inventors had been united in one company, they might have prevailed on the Lords to pass the bill which the Commons had passed, to repeal the prohibitory tolls; and it is probable that their united talents would have produced a better carriage than any separately could produce. On this point Gordon remarks: "That so many attempts should have proved abortive, and that so few should have been successful, is no wonder, when it is remembered that almost every patentee or projector endeavored to work independently of his contemporaries in the same field. If one has had an improvement in the boiler, he has refused to look at another's experience in the general arrangement. If this inventor has improved the mode of propulsion, he lightly esteems the advantage of that one who has arranged a regular draft for the fire. A disposition to work independently has been the ruin of numerous projectors, and the sickener of those whose funds were for a time at their disposal. * * * There are distinguished mechanics, acknowledged philosophers, and eminent engineers, all falling short of Gurney, Hancock, and Macerone. Many of them exhibited beauty of arrangement in minor details, but nothing more; and the public mind being always impressed by the majority, the labors of such men have

encouraged the belief that there are insurmountable physical difficulties which still remain. * * * That successful builders will detail their process for doing so, we can not expect. Building may be their business hereafter; and their hard apprenticeship will but little dispose them to publish the secrets of their craft."

The vulgar saying, that opposition is the life of business, was never more forcibly refuted than in this case. All the force of the friends of this enterprise was required to defend it against the landed interest, the bigoted road-trustees, the jockeys, and the egotists who wish to put down all that can detract from their own importance; and for years after the invention is revived, it will be desirable that all the talent and all the capital should be combined in one company, which company should not be committed to any one invention, but should liberally aid all inventions, and adopt all that is best.

One would hardly think that the railroad should be forced into the ranks of the enemies of steam-carriages. While the railroad lasts, flat roads must be used; for a railroad can not go to every door. The common road is the railroad's feeder; and the question is, can we make it more efficient by putting upon it a power that has made the railroad successful? Where great speed is allowable, the railroad may be the best; but where six or eight miles an hour is all that is allowable, and stops must be frequent, a flat and smooth surface, of iron or stone, is better, because it will accommodate all kinds of traffic, permit frequent stops, and go to every door without the trouble of transhipment. In a city and its suburbs it is expedient to devote all the money to one system—to put into the pavement all that is now expended for pavement and rails. We should then have a traction easier than that of the grooved rail, with the dirt in it; and we should have cleanliness, which can never come with stone pavements and horse-power; and all this for a purpose to which the rail is but imperfectly applicable. But, in spite of all this, there are men who, because rails are the best on long lines, jump to the conclusion that they are best in all cases, and say that steam without rails is not advantageous.

In conclusion: the enemies and lukewarm friends of steam-carriages are unwilling to rely on "theory," or the deductions of reason, for proof as to their economy. Why, then, do they make adverse *assertions*, which tend to prevent experiments from being tried? But facts, well attested, prove that steam-carriages can work with profit. Even the fact that the trustees of roads piled them with broken stone, for the purpose of breaking down steam-carriages, proves that they did not deem them likely to die a natural death, as they soon would have done, if they could not be made profitable.

Since the foregoing was in type, the *Scientific American* has published "a brief history, with some reflections," occupying two columns and a third, of steam-carriage experiments. In the course of this "history" it reiterates its statement that the carriages which ran between Glasgow and Paisley failed, and attempts to show that there is no truth in the statement that the road was encumbered with broken stone. Its argument is as follows: "By another law no stones could be placed on the road by the trustees of more than one cubic inch in size. * * * And had the steam work been broken down, as has been asserted, those who placed the obstructions would have been hanged or sent to a penal colony." Moreover, it says: "We have been informed by one that these coaches were 'Gordon's,' by another that they were made by Robert Napier, while a third says they were built by that excel-

lent engineer, Scott Russell. It makes no matter who was the builder, nor whether they run in '33 or '34; the name and date are of very little consequence; the fact is the main point, and that is not denied."

The fact is, indeed, the main point, which I have been trying these two years to get at. But while this paper withheld the name and date I could not identify it. I now take this as an admission that I was right in supposing that they were Russell's carriages, and ran in '34. Whether the name and date are of consequence, may be seen by the following extracts. But first I will remark that the law limiting the size of broken stones to one inch is no proof as to the number of cart-loads that were laid down.

The following extracts are from the *London Mechanics' Magazine*, 1834, Vol. 21, pp. 270, 288, 304, 352:

MR. RUSSELL'S STEAM-CARRIAGES.

"Through the medium of a letter from Glasgow, we are happy to record the great and increasing success of these carriages. Our friend writes, that having recommenced their regular business career on Wednesday morning, they ran throughout the day with the utmost punctuality. The speed may be judged from the following statement sent us:

1st carriage,	No. 4,	30 minutes.		4th carriage,	No. 3,	46 minutes.	
2d	"	No. 4,	34	"	5th	"	No. 1,	25	"
3d	"	No. 3,	45	"	6th	"	No. 1,	25	"

The distance here taken is from Tradeston, Glasgow, to the Tontine Inn, Paisley; for although the carriages start from George's Square, they are not put to their speed until they get clear of the crowded streets; but as this distance is at least seven miles, the rate attained by the last vehicle, which, we understand, contains the latest improvements, is not much less than 17 miles per hour. Another circumstance we are glad to hear was, that, so highly have the public already begun to appreciate this new mode of conveyance, the carriages were overloaded with passengers the whole day. We observe, however, that the trustees of the Glasgow and Paisley road are by no means favorable to the undertaking, and have been for this week past busying themselves in laying down immense heaps of stones on all the ascents and *best* portions of the road, for the apparent purpose of obstructing the progress of the carriages, though hitherto without effect. This conduct, as might have been expected, is meeting with the general indignation of the people in that quarter."—*Edinburgh Observer.*

"We have much pleasure in noticing the last two days' most successful performance of the steam-carriages. On Wednesday they made six trips, and yesterday an equal number. They were crowded with passengers; and so great was the anxiety to obtain seats, that although there is accommodation for 26, it was impossible to prevent upward of 30 from taking seats upon them. The average velocity is 12 miles an hour; and the only impediment to a high rate lies in the extraordinary state of the road, which should at this moment be in the best condition, but has just been deeply bedded with broken stone, laid on in large masses, for the purpose of injuring the carriages. This is a line of illiberal policy which it is hoped the trustees will not persevere in, as it can not affect the success of the carriages, which will assuredly be carried through with advantage, while the road is thereby rendered unfit for general traffic, at a great expense to a public trust. At the sixth trip on Wednesday last, as the steamer was coming up to the new

metal, it was found that enormous heaps of stones had just been laid down; and the tremendous power requisite to pass to it smashed one of the wheels, and detained the carriage till it was replaced."—*Glasgow Courier, July* 1.

"On Friday evening last, a highly interesting experiment was made to ascertain the comparative merits of two of the company's steam-carriages, upon different constructions. A little after six, they left George's Square, with a supply of fuel and water for eight miles. They proceeded together through the crowded streets, as rapidly as safety would admit, and along the Paisley road, to a point a little beyond the Two-Mile House, where they turned and started together. After keeping exactly together for a quarter of a mile, the one on the improved construction began to show a manifest superiority, and rapidly distanced the other, and on arriving at the Gorbals had gained half a mile, having done the whole distance in 7½ minutes, while the latter required ten minutes."—*Glasgow Herald.*

"On Wednesday, the steam-carriages commenced running every hour with passengers and luggage; and they have since been plying with most triumphant success. They start from George's Square a little before the hour; and, proceeding down Queen street, take up passengers at the foot of it; and, starting from the head of Maxwell street, they pass through Tradeston, where they again take up passengers. This occupies twelve or fifteen minutes; and the seven miles to Paisley are done in 30 or 35 minutes. A few minutes are thus left to take in fuel and water, with the passengers, at Paisley; and at the succeeding hour the carriage returns to Glasgow.

We noticed on Tuesday the *kindness* with which the road-trustees at the Glasgow end had accommodated Mr. Russell's carriages, at their own expense, (or that of the public,) with a sufficient quantity of new metal to try their powers; but we have since discovered that this *kindly disposition* has been carried a little too far, and that, having found the carriages more than competent to the task of ploughing through the stratum of broken stones, previously laid down, they employed a large number of men on the following day to lay down another stratum of equal thickness, on the top of the former, rendering the road scarcely passable to any heavy load. Finding this expedient also ineffectual, we learned yesterday that horses and carts and a number of men had been engaged during the whole of the night in laying down loads of broken stones to such a depth that they were obliged to cut away the bottom of the toll-gate to allow it to close over the mass."—*Glasgow Courier of July* 4.

"Mr. Russell's carriages have continued to perform their trips with increasing success. The following is the running of the last three days, from the Tontine, in Paisley, to Tradeston, Glasgow:

	To Paisley.	To Glasgow.
Thursday, July 17.—	10 o'clock, 40 minutes.	11 o'clock, 48 minutes.
	12 " 58 "	1 " 38 "
	2 " 56 "	3 " 59 "

Friday, July 18th, the times were: 44, 45, 35, 39, 45, 43 minutes.

Saturday, July 19th, the times were: 34, 33, 32, 35, 55, 44 minutes.

We have only further to remark, that on the last two trips the anxiety to get places was so great that the carriage took out 28 passengers and returned with 39."—*Glasgow Herald, July* 21.

"THREE MORE DAYS' RUNNING OF RUSSELL'S STEAM-CARRIAGES.—Monday, July 21.—Times: 50, 35, 41, 33, 46, 59 minutes. Tuesday, 22d.—Times: 50, 40, 49, 52, 39, 36 minutes. Wednesday, 23d.—Times: 35, 34, 37, 36, 59, 37 minutes.

The carriage that left Glasgow yesterday at twelve, did the distance from the Half-way House to Paisley, fully three and a half miles, in ten minutes, being at the rate of 21 miles an hour!"—*Glasgow Courier, July* 24.

"One of Mr. Russell's steam-carriages between Glasgow and Paisley having been over-set by the breaking of a wheel, the boiler burst, and five persons were killed. The Court of Sessions has, in consequence of this, interdicted the whole set of carriages from running, for the present at least. A fine specimen this of Caledonian wisdom! Why do they not clear the Clyde of all its steamers, since certain it is that steamboats have met with accidents as well as steam-carriages, and are as likely to meet with them again? It is impossible so absurd an interdict can stand."—*London Mechanics' Magazine, August* 3.

[We make no apology for occupying so much space with this subject, for we consider it one of the practical questions of the day. Steam-carriages are to be running on our common roads, ere long, we firmly believe. If steam is cheaper than horse-power, and so much cheaper as to warrant the immense outlay for railroads, why will it not pay without this expense? The only difficulty appears to be in arranging the machinery so as to have it perfectly under control. In fact, the steam-carriages would now be in operation in England, in our judgment, had not a combination of hostile influences driven them off the ground.—EDS. P., L., AND A.]

DILATATION OF CAST-IRON BY SUCCESSIVE HEATINGS.

TRANSLATED FROM LE TECHNOLOGISTE, MAY, 1854.

THE Memoirs of the *Société Industrielle de Hanovre* contain on this subject a short note, which we here present to our readers:

"The remarkable phenomenon that cast-iron presents after being heated, of not returning, on cooling, to its original dimensions, but of presenting constantly an increase of this volume, and, by consecutive heatings and coolings, of acquiring a permanent volume, larger and larger, was first observed by Prinsep, in 1829. This chemist found that a retort of cast-iron, of which the capacity had been measured with care by the weight of mercury it contained, gave the following results. Before ever being heated, the retort contained 9.13 cubic inches of mercury; after the first heating and cooling, the contents was increased to 9.64 cubic inches; and after three successive heatings to the fusing point of silver, the contents was 10.16 cubic inches. The cubic dilatation produced then was 11.28 per cent, or a lineal dilatation of nearly 3.73 per 100. Since this, there has been occasion to observe more frequently, and to investigate this property of cast-iron. It has been remarked, in effect, that all grate-bars which sustained a high heat became curved, little by little, that they elongated more and more, until finally they would push out the bars that sustained them.

M. P. W. Brix, in a work he has recently published, entitled *Researches on the Calorific Power of the Principal Combustibles found in Prussia*, has made known some experiments on this subject. By the aid of numerous measurements,

he has found that its permanent length augments after a heating, but that this augmentation was so much the less as the bar had been heated more often, and finally ceased. Thus, a grate-bar of 3.5 feet in length, after three days of a moderate fire, had taken a permanent elongation of 3-16 of an inch, (equal to 0.446 per cent;) at the end of 17 days, this elongation was 7-16 of an inch, (1.042 per cent,) and at the end of 30 days had reached 13-16 of an inch, (nearly 2 per cent,) and did not yet appear to have attained its maximum. Another bar of the same kind, after a long service, had preserved a permanent elongation of 1.25 inches, or nearly 3 per cent. The bars, while in the fire, experience another elongation, which is temporary, and contract as the heat is diminished; and it may hence be concluded with M. Brix, that it is proper to give to each new bar a play, longitudinally, of about 1-25 of an inch, or 4 per cent, to allow for this permanent and temporary elongation. In all cases, it is necessary to make it long enough, that when cold it may not fall between the supports, but in general it seems that not sufficient play is given to bars supported in this manner."

NOTE BY TRANSLATOR.—This is a matter very important to be thought of in all cases where cast-iron is submitted to the action of high heat, as furnaces, retorts, boilers, etc., and especially in cases where cast-iron may be riveted or fastened to boiler-iron or other metals. In such cases, the cast-iron, in expanding permanently more than the other metal, will give the surface a curved form, and tend to break the rivets, or other parts of the construction, and in certain circumstances might be productive of very inconvenient results. This is very plain to any practical man.

Where the cast-iron part of an engine is riveted to the boiler, as is often the case, the attachments should be made, as far as possible, at places not submitted to great changes of temperature; but if this condition can not be fulfilled, make the attachments in a manner to obviate, as far as possible, the evil referred to. This remark is made, not only with regard to the permanent elongation the cast-iron undergoes, but also with regard to the different degrees of expansion experienced by cast and wrought-iron or other metals, by the same increase of temperature. The effects of this are soon noticed in the loosening of joints, warping of surfaces, etc. The intelligent builder, with a knowledge of these facts and their extent, can, by the simple laws of common-sense, arrange his work properly.

These effects may be noticed in almost every place where cast-iron is submitted to high heats, in retorts, furnaces, etc.: the shoving out of bricks, the pushing aside of supports, and neighboring parts, etc.

EMPLOYMENT OF QUICK-LIME IN HIGH FURNACES INSTEAD OF LIME-STONE.

BY C. MONTEFIOR LEVI AND DR. EMIL SCHMIDT.

FROM experiments made at the iron-works of Ongrée, near Liege, these gentlemen found that to produce 100 kilogrammes (220 pounds) of pig-iron, the average consumption of coke for six months of 28 days, when lime-stone was used, was 160½ kilos., (353 pounds,) while with burned lime the consumption was only 146½ kilos. (322 pounds,) being a saving of 8.88 per cent. The average production for 28 days, with lime-stone, was 461,000

kilos., and with burned lime, 735,000 kilos., or an increase of 24.3 per cent. Corresponding results were obtained with another furnace worked three months with lime-stone and three with burned lime. The average coke consumed per 100 kilos. with the former being 162, and with the latter 147½ kilos. The production of iron per month being on an average 469,000 with lime-stone, and 563,000 with lime. The furnaces at Ongrée have now been working 3½ years with lime, with the same result, the saving per year, notwithstanding the cost of first having to burn the lime, being 30,000 francs per furnace. The same process has been successfully tried in some parts of Wales and in England.—*Edinburgh Phil. Journal.*

THEORY OF IRON SMELTING.

A BLAST furnace consists of two columns, one of air, ascending from below upward, and the other of solids, thrown in from above and descending. At the top, the amount of watery vapor is 9 to 14 per cent. But the vapor in the gases rapidly diminishes. At the top the gases are, nitrogen, 57·79: carbonic oxide, 23·51; carbonic acid, 12·88; hydrogen, 5·82. At between eight and seventeen feet from the top, the carbonic acid and hydrogen diminish, and the water completely disappears. The oxygen of the air is first changed into carbonic acid, and then, by the coal, into carbonic oxide. The hydrogen is produced by the vapor of the water, which is decomposed by carbon into hydrogen and carbonic oxide. As the column of gas ascends, the carbonic oxide diminishes, and the carbonic acid increases—a change produced by the action of carbonic oxide upon sesquioxide of iron, which yields carbonic acid and metallic iron. It seems remarkable that hydrogen should exist in contact with sesquioxide of iron, at a red heat, without deoxidizing it; but it has been shown that an electric spark, passed through carbonic oxide, oxygen, and hydrogen, produces carbonic acid, while hydrogen remains. Between the neck of the furnace and the boshes the minerals lose their moisture, and the oxide of iron $\frac{2}{3}\frac{3}{3}$ of its oxygen to the deoxidizing power of carbonic oxide, while the $\frac{1}{2}\frac{1}{3}$ remaining are removed between the boshes and tweens by the carbon of the coal. At a foot above the tweens, the temperature diminishes, and to this the line of fusion is limited, and here the change of carbonic acid into carbonic oxide is complete.

COMPOSITION OF THE GASES IN IRON FURNACES.

Depth from the top in feet.....	5	8	11	14	17	23	24	34
Nitrogen	55·35	54·77	52·57	50·95	55·49	58·28	56·75	58·08
Carbonic acid.....	7·77	9·42	9·41	9·10	12·43	8·19	10·08	—
Carbonic oxide	25·97	20·24	23·16	19·32	18·77	29·97	25·19	37·43
Carbonic hydrogen.....	3·75	3·23	4·57	6·64	4·31	1·64	2·33	—
Hydrogen	6·73	6·49	9·33	12·42	7·62	4·92	5·65	3·18
Olefiant gas.....	0·43	0·35	0·95	1·57	1·38	—	—	—
Cyanogen.....	—	—	—	—	—	trace.	trace.	1·34

The occurrence of cyanogen is interesting, although its formation had been long ago pointed out. When an iron tube was introduced through a hole two feet nine inches above the hearth, a gas passed out, burning with a yellow flame, similar to that occurring during the preparation of potassium. The tube was soon obstructed by cyanide of potassium. The cyanogen is produced by the nitrogen of the air or coal, while the potassium is derived from the

potash of the coal, (.07 per cent,) and from the iron ore, (.75 per cent,) amounting to 270 lbs. in twenty-four hours. The cyanide of potassium is volatilized, and is decomposed by the air into carbonate of potash and cyanide, which is gradually decomposed as it ascends. That the cyanogen is not altogether decomposed is, however, proved by the results obtained at Coltness iron works, where, in saving the waste gases for the purpose of calcining the ore, a considerable quantity of alkali, containing cyanide of potassium and carbonate of potash, is sublimed in the common furnace at the summit. The amount of alkaline salts sublimed may be about two and a half tons per furnace during the year.—*Ex.*

CINCINNATI AND CHARLESTON RAILWAY.

The Kentucky Legislature has granted a liberal charter to the Kentucky Union Railway Company, whose object it is to make the last link in the railway line from Cincinnati to Charleston. The distance by the route adopted will be as follows:

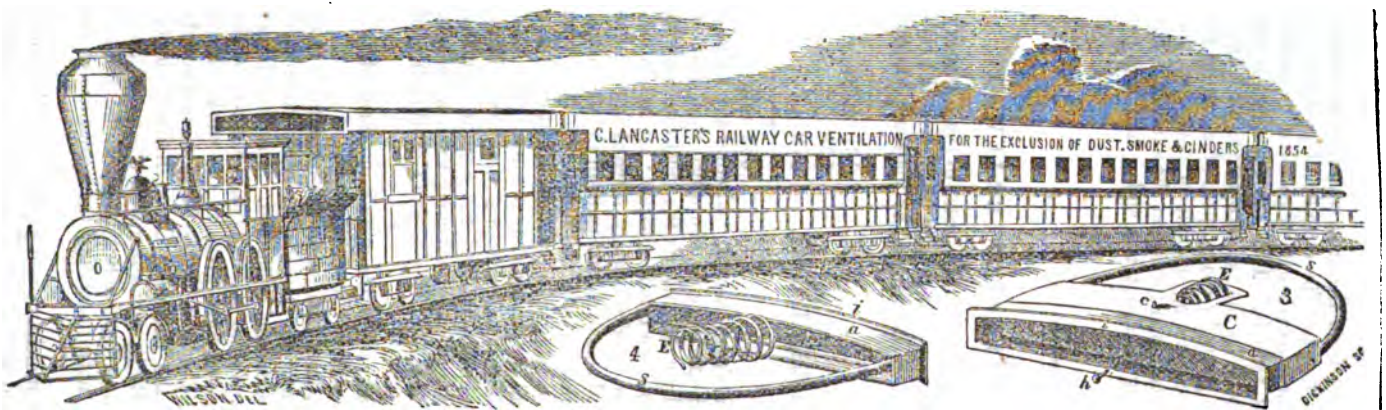
Cincinnati to Danville, - - -	132 miles.
Danville to Knoxville, - - - -	130 "
Knoxville to Charleston, via Blue Ridge Railroad,	370 "
Aggregate, - - - -	632 miles.

"We doubt," says the *Cincinnati Railroad Record*, "whether any railway in America will ever be of such vast importance as one which shall connect the Valley of the Ohio with the Southern Atlantic on the most direct route. The productions of the different sections are totally different; the habits and usages of the people are different. The interior country, reached from either end, is full of the most valuable mineral resources, and thus all the exchanges would be beneficial, both in a commercial and moral aspect. It is now nearly twenty years since this subject engaged the profound attention of the people of Cincinnati, Charleston, and all the intermediate country. We have before us the pamphlets and letters published and written at that time. They exhibit the proceedings of various public bodies, and the records of many distinguished men, now commemorated by history. Among them were Gen. Harrison and Dr. Drake of this city, and Gen. Hayne and Col. Blanding of Charleston.

Time has only proved what was then said of the great importance of this work, and rendered its necessity to the country more apparent.

The completion of this grand route, from Charleston to Cincinnati is now entirely within reach. From Cincinnati to Danville is nearly completed. From Charleston to Anderson, South-Carolina, is finished. The Blue Ridge Railroad from Anderson to Knoxville, via the Rabun Gap, is secured by the ample aid South-Carolina and Tennessee have given to the work. From Knoxville to the Kentucky State line is secured by the State aid and county subscriptions. The line covered by the Kentucky Union Railway charter is, therefore, the only one wanting. By its connection with other roads, and the immense through-traffic which must inevitably take place, the stock of the road will undoubtedly be good, notwithstanding the sparseness of the country through which it passes.

There is no enterprise in which the merchants and capitalists of Cincinnati have a deeper interest than in this, and we trust it will meet with the encouragement which it so eminently deserves."

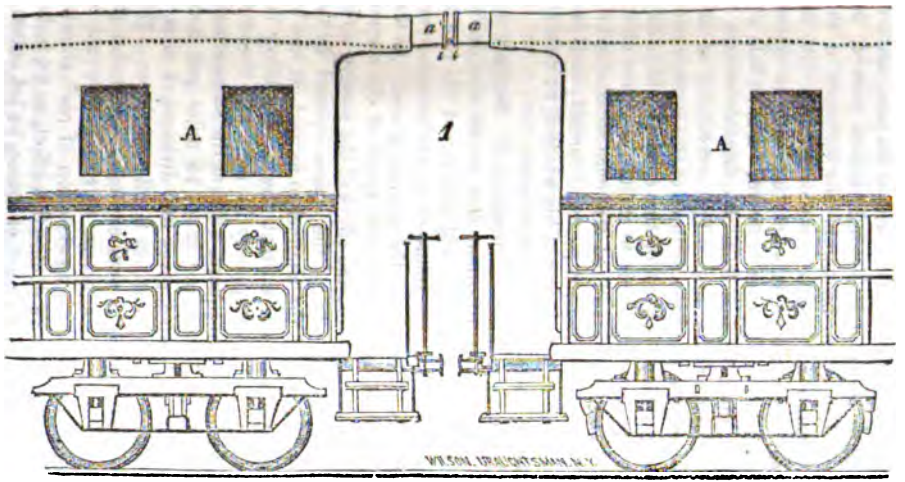


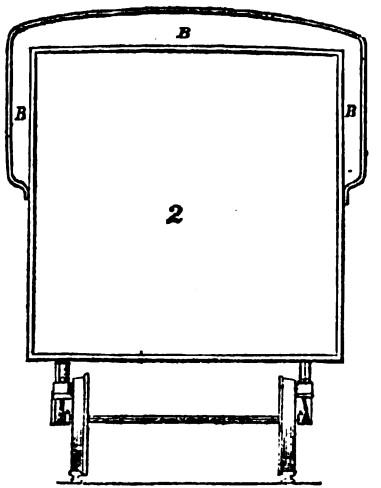
THE improvement, of which the above cut is a representation, consists of a spacious air-channel over the entire top of every car of the railway train, and also down over the sides, so far as to include in the same channel the windows of the passenger-cars, with glazing opposite each. The channel is made continuous from car to car by movable extensions of the roof part of the channel from each end, along with, and beyond the roof of every car, to meet those of adjoining cars.

A, fig. 1, indicates secondary walls erected over the usual primary ones to form the channel B, in the transverse section fig. 2 at an interval of one or two feet or more for the roof part, and for the side, three to six inches. The side-channels are closed at each end and terminate below, near the bottom of the windows. The side-channels are omitted on the baggage-cars.

The chief movable piece adapted to self-adjustment, and to play over the platform, is the same at each end of every passenger-car, and consists of the short piece of channel, *a*, fig. 4, with one or more springs, E, upon its inner end and the face-flange *i*, surrounding its outer end. A valve-door, D, is hinged from above, inside the flange, closing by its own weight the channel at the latter end of the train. The valve-doors at the end of every other passenger-car are opened inward by the hinged pin *h*, meeting the opposite flange on uniting the train. Baggage-cars are without valves.

The flanges are used to give the separate channel-ends suitable meeting-faces to be held together by the springs, but to move freely upon each other in the variations of their level, and also to preserve the channel itself unbroken by such movements. The springs rest





against bearings provided within, to which they are also fastened, and the balance of the whole piece is preserved by the weight of the semicircle *s*, attached thereto. The sides being rounded, it will always fill the lined cavity between the upper and lower roofs, while turning either way on curves of the road, as well as reciprocate by the action of the springs.

Fig. 1 exhibits this single movable piece in two adjacent car-ends. But to give greater stability, when desirable, this channel-piece, as in fig. 3, is inserted in another piece, C, having the central pivots *c* above and below; this latter has only the turn-table motion, the other the reciprocating.

In the general view of a train on a curve, with this improvement attached, heading the above cut, the appearance of these together may be observed.

The motion of the train passes the pure air through the channel from the head of the train, into the interior of the passenger cars, by way of the inner windows, at the option of those who sit opposite, which thence forms a current outward through every opening, effectually repelling the dust. Smoke and cinders are left behind the channel's mouth, before their descent.

In the construction of new cars, compactness and economy may be gained by locating the main channels between the inner and outer casings of the cars, in which case a valve-slat, or shutter in the casing of the window recess, governs the admission of air, instead of inner windows.

From the foregoing description, illustrated by the figures in the cut, it is believed the process of ventilation by this plan will be fully understood. The earnest and careful attention of railway managers, car manufacturers, and men of science, is respectfully invited to the philosophical principles involved, in the exclusion of dust from cars, and the practicability of the proposed method of putting them in operation. The subject has long engrossed the attention of the inventor, who believes the plan here presented combines the provisions necessary to exclude the dust, smoke, and cinders, a profusion of pure air, economy of expense, and those self-adjusting features which will render any attention from those in charge of the train superfluous.

It will be observed that the theory adopted is, that the rapid displacement of the air caused by the passage of the train through it at a high rate of speed raises the dust, and the friction and eddy resulting cause it, by the suction toward the centre of the eddy, to envelop the rear of the train; and there being no corresponding pressure of the air from within the cars, *outward*, but owing to the waste through the roof a decided suction *inward*, the dust, smoke, and cinders which happen to be within the influence of this eddying current, are drawn through all the apertures or crevices into the interior of the cars. To prevent this intrusion, it is only necessary to oppose an equal pressure of the air from inside the cars *outward*. But as this air, in order to remove the difficulty, must be free from objectionable matter, it is necessary to take it from the head of the train. The correctness of this theory it is believed few will deny. Some of the features of this arrangement must be decided by experiment; such as the size of the channel which may be necessary to convey a sufficient quantity of air to exclude the dust effectually from the longest trains. The largest required size once ascertained, all may be uniformly constructed, as, in case of a too powerful current, each passenger has his own remedy at hand in the closing of his window, or decreasing the size of the aperture through which the air is received.

The efficiency of the ventilation may be thus demonstrated. Suppose the entrance of the channel to have an area of 10 square feet, which will give us 90 divisions of area, each 4 inches square. This will pass air at the rate of 32 miles per hour—the assumed speed of the train—if an unobstructed passage is formed through the interior of the cars to the open air above. As the channel becomes enlarged in its interior formation, the speed of the current will be diminished, and at the windows, where the effect of the passing air is required for coolness, the channel will consist of the spaces opened by the raised windows of the train. The size of the channel so formed, at and by the windows, will govern the speed of the current there. Doubling the capacity of the channel inwardly, and consequently its area, will therefore give us 180 divisions of area, each 4 inches square, while at the same time it will take from the velocity one half, reducing it to 16 miles per hour. Doubling again the capacity of the channel, gives 360 divisions of area, 4 inches square, leaving the speed of the current but 8 miles per hour. This would give to 360 windows 16 inches of air-current each, at 8 miles per hour, or 32 inches at 4 miles per hour; a breeze as strong as would be agreeable, if constant, in a warm day. With an elevation of roof allowing an entrance of 20 feet area, we should have double this effect, or 64 inches each window. The air after entering the cars must, of course, be led outward

through a sufficient number of ventilating chimneys of the usual construction, unless better modes shall be prepared for its escape.

The inventor is aware that so many methods of ridding the travelling public of the insufferable nuisance of dust have been proposed, most or all of which have failed to answer the desired purpose, that the attempt to form such a combination as will steer clear of all objections and provide a healthy and pure atmosphere to breathe, without adding the least inconvenience to the present mode of travel, may be deemed a bold if not a rash undertaking—an improbable if not impossible achievement. Having full faith, however, in the correctness of the views which have guided him from the conception to the maturity of his plan, he places it before the public with the utmost confidence that practical experiments will establish the complete success of this mode of ventilation. Experience teaches us that many things which were long considered impossible or even visionary, have been lately accomplished by human invention, and it may not, perhaps, be too great a tax upon the credulity of some to believe in the success of this.

The practicability of the invention having been decided upon, the next question presenting itself is one of expense. Most people would say this latter is of no consequence at all, where health and comfort are so directly concerned. And there is little doubt that the increase of travel which would result from the extinction of this annoyance from dust, would refund the cost many fold. It will be seen that the chief expense of applying this mode of ventilation to new cars will consist in the cost of the movable extension-pieces which make the channel continuous; while the application of it to cars already constructed would only involve a secondary roof and outer walls, extending down so as to include the windows. The expense attending either of these modes of application is comparatively trifling.

The inventor, Mr. Cyrus Lancaster, of Brooklyn, N. Y., has secured his right to this improvement by application to the Commissioner for Letters Patent. As the adoption of this plan of ventilation, immediately its success is demonstrated upon all the great routes of travel, especially where competition exists, is deemed almost certain as a means of retaining a share of the public patronage, it is submitted that manufacturers of cars would do well to give it their consideration, with a view of obtaining a right to incorporate it in cars of their construction at the earliest practicable moment

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ON THE EMPLOY OF SAL AMMONIAC TO PREVENT INCRUSTATIONS IN STEAM-BOILERS.

TRANSLATED FROM LE TECHNOLOGISTE, MAY, 1854.

The Memoirs of the *Société Royale des Ingenieurs Hollandais* contain two reports on this subject, which we have caused to be translated into French, on account of the interest the question presents at present.

Report of M. de Bries Robbé.—The employ of sal ammoniac to prevent incrustations in steam-boilers, or to make them disappear, has been proposed by M. H. Ritterbrandt, and since has drawn the attention of M. Conrad, Director of the Corps of Engineers in Holland. It is to him that are due the experiments in question: "The experiments which have been tried on locomotives on the railways in Holland, have demonstrated that it is an

excellent means to detach and dissolve the calcareous incrustations of boilers, and dispose of them so far that the boilers may be completely rid of them. To prove this, there was introduced 60 grammes (a French gramme is the 1-1000th part of a kilogramme, or 2.2 pounds) of sal ammoniac in powder into a boiler, immediately after being filled with water. This was left until the evening of the next day, after the locomotive had done its service. The boiler being found not dirty, it was run still another day, at the end of which it was emptied, and the boiler appeared perfectly clean. The water taken out was generally, in proportion to the calcareous matters contained in the boiler, a solution more or less saturated witn sal ammoniac and lime, which amounted to 1-800 the weight of the solution. Later, there were formed paillettes of lime, which easily passed off by the discharge-cocks. After the boiler had thus been, during fifteen days or a month, purged of incrustations, it sufficed to introduce once or twice per week 60 grammes of the salt, to keep it entirely clean. A more attentive examination showed that the water, after one or two days of service, did not give a single trace of iron or copper in solution.

"It is certain, then, that the quantity of salt indicated can not in the least shorten the duration of the boiler, (the writer here refers to the effect on the boiler and tubes which might be suspected to take place by the decomposition of the sal ammoniac, sulphate of ammonia,) and consequent disengagement of free sulphuric acid, but, on the contrary, may augment that of the fire-box and tubes, by preventing destructive incrustations; and it also decreases the quantity of combustion, as the incrustations are very bad conductors of heat. Again, the decreased quantity of fuel used tends of course to make the boiler last longer. It is probable that the sal ammoniac, in combining with the lime, forms chlorhydrate of lime, and that by this combination the ammonia is set free; at least this is what is conjectured by the odor of the steam. The sal ammoniac, in powder, costs about 3 francs per kilogramme."

Report of M. C. Scheffer.—"At the commencement of the year 1847, experiments were undertaken on the steam-boiler at the royal saw-manufactory of Rotterdam, with sal ammoniac, to ascertain to what point they could succeed by this means to prevent the injurious effects of incrustations on the sides of this boiler. This boiler is low-pressure, the tension of the steam being scarcely 1-10th of an atmosphere above the ordinary atmospheric pressure, and puts in movement a machine of 16-horse power, of Maudslay's. The water employed is that of the Meuse, which, according to the analysis of M. Muller, contains much calcareous matter. From the 26th March there were introduced, three times a week, 100 grammes of sal ammoniac into this boiler, after having been cleaned of all previous incrustations. Four months afterward, I submitted to an examination the sides of this boiler, and I found a tolerably regular accumulation of incrustations on the vertical sides, while above the furnace this crust was much less. Its thickness was evidently less everywhere than usual, and nevertheless, during all this period, it had been heated on the average 14 hours per day. The boiler was cleaned anew, and about 45 pounds of incrustations removed. I at once commenced a new trial, and as I did not know exactly the proportion of salt necessary to completely prevent the evil, I resolved to double the former trial, and to use 200 grammes, which was thrown twice a week into the boiler. After more than five months of work, there were still some incrustations, and principally, as in the first trial, on the vertical sides; but the experiments go to show that, by the use of this salt, incrustations may be very much diminished, and perhaps totally prevented, and it is of great importance to pursue these experiments further."

ELECTROTYPING.

The following is the process for covering a piece of metal with the substances named. The directions are as given by Dr. Gore:

To Coat Articles of Copper, Brass, or German Silver with Aluminium.—Take equal measures of sulphuric acid and water, or take one measure each of sulphuric and hydrochloric acid and two measures of water; add to the water a small quantity of pipe-clay, in the proportion of five or ten grains by weight to every ounce by measure of water, ($\frac{1}{4}$ or $\frac{1}{2}$ oz. to the pint,) rub the clay with the water until the two are perfectly mixed, then add the acid to the clay solution and boil the mixture in a covered glass vessel one hour. Allow the liquid to settle, take the clear supernatant solution, while hot, and immerse in it an earthen porous cell, containing a mixture of one measure of sulphuric acid and ten measures of water, together with a rod or plate of amalgamated zinc; take a small Smee's battery of three or four pairs of plates connected together, intensity fashion, and connect its positive pole by a wire with the piece of zinc in the porous cell. Having perfectly cleaned the surface of the article to be coated, connect it by a wire with the negative pole of the battery and immerse it in the hot clay solution; immediately abundance of gas will be evolved from the whole of the immersed surface of the article, and in a few minutes, if the size of the article is adapted to the quantity of the current of electricity passing through it, a fine white deposit of aluminium will appear all over its surface. It may then be taken out, washed quickly in clean water, and wiped dry and polished; but if a thicker coating is required, it must be taken out when the deposit becomes dull in appearance, washed, dried, polished, and reïmmersed; and this must be repeated at intervals, as often as it becomes dull, until the required thickness is obtained. With small articles it is not absolutely necessary, either in this or the following process, that a separate battery be employed, as the article to be coated may be connected by a wire with the piece of zinc in the porous cell, and immersed in the outer liquid, when it will receive a deposit, but more slowly than when a battery is employed.

To Coat Articles with Silicium.—Take the following preparations: three quarters of an ounce, by measure, of hydrofluoric acid, a quarter of an ounce of hydrochloric acid, and 40 or 50 grains, either of precipitated silica or of fine white sand—the former dissolves more purely—and boil the whole together a few minutes until no more silica is dissolved. Use this solution exactly in the same manner as the clay solution, and a fine white deposit of metallic silicium will be obtained, provided the size of the article is adapted to the quantity of the electric current; common red sand, or indeed any kind of silicious stone finely powdered, may be used in place of the white sand, and with equal success, if it be previously boiled in hydrochloric acid, to remove the red oxide of iron or other impurities. Both in depositing aluminium and silicium, it is necessary to well saturate the acid with the solid ingredients by boiling, otherwise very little deposit of metal will be obtained.

The Largest Church in Europe is at St. Petersburg. It was begun in 1771, and in twenty years two thousand men had not finished the walls. It is of polished marble, both outside and in; the pillars are of one piece, fifty feet high, the base and capitals of solid silver; but the greatest curiosity of all is a wooden box, constructed to cover it from the weather.

THE MINERAL RESOURCES OF VIRGINIA AND NORTH-CAROLINA.

THE following is the work of Samuel M. Dewey, a public-spirited citizen of Virginia:

List of valuable and interesting Minerals, including some of the principal ranges of Rocks, known to abound in the counties of Henry, Patrick, Carroll, and Floyd, in Virginia; and in Rockingham, Stokes, Forsyth, Surrey, and Yadkin, in North-Carolina: a Section of the Piedmont Country, embracing the Northern Head-waters of the Great Yadkin, and all the Tributaries of Dan River.

1. IRON ORE of every desirable species or kind, apparently boundless in quantity; beds or veins of one or more valuable varieties existing in each o the above-named counties, all of which, except Carroll, Henry, and Forsyth, having yielded ores that have been successfully converted into iron of the best quality.

2. COAL.—Anthracite, or Stone Coal, in Rockingham and Stokes, approaching nearly or quite to the line of Henry county, if it does not pass to that section of Virginia; the Fossil Coal is of excellent quality, and to all appearance is exhaustless as regards quantity.

3. LIMESTONE.—Primitive, Granular Limestone, or the finest quality of White, Gray, Mottled, and other colored Marble; there being seven quarries in Stokes, three in Forsyth, two in Yadkin; beside an extensive range of impure Linestone in the counties of Stokes and Forsyth; a single range or bed of the same in Patrick; and several quarries of secondary Limestone in Rockingham, some of the latter being Hydraulic Limestone, while others are of the most beautiful and valuable qualities of Granular, Black, Variegated Marble, superior to any other known to be found in the United States.

4. LEAD ORE—In Carroll, Floyd, Stokes, and Surrey.

5. COPPER ORE—In Patrick, Carroll, Floyd, Forsyth, and Surrey.

6. GOLD.—There have been recently discovered three auriferous deposits in Patrick, one in Carroll, three in Stokes, four in Forsyth, three in Surrey, and four in Yadkin; making eighteen gold deposit mines, each of them being believed to be traceable to veins that have not been sufficiently penetrated or tested to be pronounced workable, or rich enough to justify their being worked.

7. MANGANESE.—Three beds in Patrick, one in Carroll, one in Henry, two in Forsyth, and one in Surrey.

8. PLUMBAGO, or BLACK LEAD, occurs repeatedly in Patrick, Stokes, Forsyth, Surrey, Yadkin, and Rockingham.

9. NATIVE ALUM exists in several parts of Patrick and Stokes.

10. SALTPETRE exists in Patrick, Henry, Floyd, Stokes, and Surrey.

11. FIRE-BRICK CLAY—In Patrick, Stokes, Surrey, and Rockingham.

12. PORCELAIN CLAY—In Stokes and Surrey.

13. POTTERS' CLAY—In Forsyth, and throughout the other counties.

14. PURE WHITE TALC, OR CRUDE FRENCH CHALK—In Surrey—there being an extensive range of impure Talc in Patrick, and also one in Carroll.

15. ITACOLUMITE, or perfectly fire-proof Elastic Sandstone, in Stokes.

16. BRONZE-COLORED, SATIN-LUSTRED SERPENTINE—In Stokes and Forsyth.

17. VARIEGATED AND OTHER VALUABLE KINDS OF STEALITE OR SOAP STONE, in Patrick, Carroll, Floyd, Stokes, Forsyth, Surrey, and Yadkin.

18. Primitive Sandstones, suitable for a variety of purposes, such as grindstones and whetstones, in Patrick, Carroll, Stokes, and Surrey.

19. Secondary Sandstones, suitable for grindstones and whetstones, in Henry, Rockingham, and Stokes.

20. Mill-Stone Grit, in Patrick, Henry, Stokes, and Rockingham.

21. Burr-Stone, in Floyd, Stokes, Surrey, and Forsyth.

22. Jasper, of many varieties, including the Opal, Striped, Yellow, Red, Brown, and other hues—some of them being drusy, or incrusted with minute Quartz Crystals—also Botryoidal and Mammillated concretions, in four parts of Stokes.

23. Calcedony, of all tints and colors, embracing the Wax-lustred, the Milky or White Cornelian, Rose-colored, Blue, Pink, Honey, Yellow, Sard, etc., with Mammillated and Botryoidal concretions, also the Druse, in nine sections of Stokes and one of Forsyth.

24. Agates.—Mossy, Yellow, Scarlet, Green, and Gold-colored, with wav ing lines, etc., in two parts of Stokes.

25. Garnets, in Carroll, Patrick, Stokes, and Forsyth.

26. Black Schist, or Tourmaline, in Henry, Patrick, Carroll, Stokes, Forsyth, and Surrey.

27. Yellow Tourmaline, in Yadkin.

28. Stalactitic Quartz, with Jasper base, in Stokes.

29. Hornstone, of Honey, Yellow, Claret, and other colors, in Stokes.

30. Amethystic Quartz, Crystals, in Henry and Forsyth.

31. Limpid, Corrugated, Yellow, and Pink-colored, Auricular, Pyramidical, and Prismatic-shaped Quartz Crystals, in Henry, Forsyth, Patrick, Carroll, Floyd, Rockingham, Stokes, Surrey, and Yadkin.

32. Actinolite, or Cotton-Stone, in Floyd, Stokes, Surrey, Yadkin, and Forsyth.

33. Tabular Druse Quartz, in Forsyth and Yadkin.

34. Silicious Petrifactions, in Stokes and Rockingham, constituting a vast range of petrified trees, or parts of trees, some of them measuring nine feet in circumference, and some that were evidently more or less decayed, previous to undergoing the process of petrifaction, contain clusters of Quartz Crystals. This remarkable body of fossil curiosities extends from Germantown, in Stokes, to Leaksville, in Rockingham, a distance of about twenty-five miles, and fully merits the name of Petrified Forest.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

OBSERVATIONS ON THE DROUTH IN LAMOILLE COUNTY.

Messrs. Editors: In Lamoille County we have a large portion of alluvial, sandy plain, which in dry seasons does not produce well, especially grass, which is a very essential crop in this high latitude. The earth has not been saturated with water since May. The 8th June we had several fine showers; since that time we have had four showers that wet down about one inch; none to exceed two; several sprinklers, to the amount of a heavy dew.

The corn-leaves began to roll the 6th July; the 16th the grass in our pastures would crumple under our feet, and was as dead as in April. Not more than one third of our corn-stalks is furnished with ears, the lower leaves are

dead, and many are now cutting it up and feeding it to their cattle. Potatoes, not one third of a crop, selling for 75 cents the bushel; hay is selling at $10 the ton, never before, at *this* season of the year, over $6, and frequently at $4. I have resided in this town fifty-six years; it never has been as dry before since my living here. In describing this extreme dryness, I confine my remarks to our sandy plains; the crops are better on the back, moist lands, but *they* suffer very much. Three weeks since, the hop-growers had despaired of a crop, on which is placed great dependence, the bottom leaves being dead up the poles quite a distance; within that time two showers have fallen, that wet down about an inch each, and the hop has matured wonderfully. The wells and small streams are many of them dry, and springs fail that never were known to before. It is not unfrequent for people to fetch their water for culinary purposes half a mile, and drive their animals thus far for water.

The shade-trees planted by the way-side, or before dwellings, one year since, and leafed out luxuriantly last spring, many of them are now dead; the maple-trees before my house, ten inches in diameter, planted thirty years ago. the leaves are falling, and many of those on the trees look as if scorched by fire.

A high cranberry in my garden has been planted more than twenty years, and its berries are shrivelled and dry; the apples and plums are falling from the trees in abundance; even raspberries and blackberries have failed. The heat has been very oppressive, the thermometer, ranging, from 12 to 2 o'clock, at from 80° to 98°, many days in succession. The temperature of the nights has been unsteady, very warm, and cool, ranging at sunrise from 68° to 40°, and this morning, Aug. 18th, 36°, the coolest since May. The barometer, for some ten weeks, has stood much of the time at 29.40, no time lower than 29.20.

That great pest in dry seasons, the grasshopper, is destroying every green thing. The leaves of the potato-vine, in many places, are all eaten off, and the silk of the corn is eaten to the cob, to the great detriment of the *little* expected from that indispensable crop; the wheat and oats are suffering from the depredations of this little unwelcome parasite.

Food for cattle is so short, as soon as the hay is taken off the stock is turned into the mow-fields, and they are pressing their claims for food and drink, and breaking into the inclosures on every hand.

Were the whole country in our predicament, a famine would be the result; wheat is not to be bought; flour, $11 the barrel; oats, 62½ cents per bushel; corn, $1.25 per bushel; potatoes, 75 cents per bushel; butter, 20 cents per pound, and other articles in proportion.

In addition to all our other woes, this morning, Aug. 18th, I discovered the rust, or rot, had attacked the potato-vines.

The drouth is very extensive, but not as severe usually elsewhere as in our county. Signs of rain are abundant, but the clouds will break and disperse without rain; the wind, for more than eight weeks has been, a great share of the time, in the south A.M., at M., and until 2 o'clock, west, at night north-west.

Your *Plough* cuts a wide furrow. I have received letters in relation to the cultivation of hops from Georgia and from Alabama, the writers of which had noticed my address in your journal. ARIEL HUNTON.

Hyde-Park, August 18, 1854.

EDITORS' JOTTINGS AND MECHANICAL RECORD.

STREVER'S DOUBLE-ACTING FORCE-PUMPS.—This pump draws and discharges an equal stream of water, and is well adapted for all situations requiring large or small quantities of water, namely: mines, breweries, railroad water-stations, tan-works, paper-mills, steam-engines, plantations, steam-boats, ships, irrigating land, dwelling-houses, wells of any depth, etc., etc. There are five different sizes, capable of discharging from 25 to 800 gallons per minute, and can be worked by hand, horse, water, or steam-power, and being compact, require but little space, and not liable to get out of order. They are said to give great satisfaction for mining purposes.

Beside pumps of all sizes, Mr. S. has on hand, and furnishes to order, at his warehouse, 170 Broadway, all sizes of wrought and cast-iron, lead, copper, block-tin, and gutta-percha pipes, leather and India-rubber hose, couplings, branch-pipes, and every article requisite for hydraulic purposes.

FALL-RIVER ROUTE TO BOSTON.—We have again had most substantial evidence of the merits of this favorite route. The "Bay State," Capt. Brown; Mr. Stickney, clerk, and that important personage, the cook, and all hands, are just what they should be, to do justice to owners and passengers; and the "Empire State," its commander, Captain Brayton, and Mr. Symons, clerk, suffer nothing by comparison, and the table of the latter, among all boats we have sailed in, is equalled only by that of the former. The state-rooms in both are convenient, the beds good and clean, and the servants throughout attentive. This route gives you but fifty miles in the cars, and an entire night's rest. Mr. Borden, 70 West street, is the agent.

WRONG LOCATION: CLOTHING-STORE.—In speaking of Lippincott & Co.'s extensive clothing-store in Philadelphia, recently, we located it on the wrong corner. It is on the south-west corner of Fourth and Market streets, and may be easily distinguished as being the only red store in the neighborhood. Lippincott & Co. are now laying in their fall and winter stock of ready-made garments, manufactured in their usual good and durable style, and we would again call the attention of purchasers to their excellent assortment.

NEW-YORK & ERIE RAILROAD.—It is a long time—more than a year—since we have had the pleasure of passing over this road. Then our old friend, Charles Minot, Esq., occupied the place which is now filled by D. C. McCullam, Esq., the present superintendent. We hear the "administration" of this latter gentleman spoken of favorably. Common fame says that the trains run with great regularity, and that the *breeze* which recently sprung up between the superintendent and the engineers has really purified the atmosphere, and redounds to the credit of Mr. McCullam. The N. Y. & Erie Railroad is a great work, and no man can pass over it without being deeply impressed with a sense of the enterprise and perseverance of those who projected and completed it. Who has not heard of the powerful locomotives, the wide cars, and the broad gauge of the Erie Railroad? A thousand, yea a million tongues, proclaim its importance to the travelling public, and trumpet its fame over the civilized world. Long may it merit the glorious things which are now spoken of it!

CAMDEN & AMBOY RAILROAD.—This company is constantly making improvements having reference to the comfort and convenience of the travelling public. Recently several hundred feet of depot-buildings have been erected at Amboy, and a large shed at the foot of Walnut street, Philadelphia, appropriately divided into passage-ways for the passengers and baggage-crates. Curves in the road are being straightened, and other improvements taking place, greatly promoting the facilities and comforts of travelling. As seven trains a day are now run, varying in fares from one dollar and fifty cents to three dollars, and in time from three and a half to six hours, the wishes of the passenger are met, both as regards time and means. The enterprising agents, Messrs. Bliss and Gatzmer, the former of New-York, and the latter of Philadelphia, are entitled to the many compliments paid them by the travelling community, for the excellent management which characterizes the road.

PIANO-FORTES.—We have had in our family for some time past, a piano manufactured by Hallett, Davis & Co., Boston. The instrument is excellent in tone and workmanship, and those of our readers who may wish an article that can be relied upon, can not do better than give a call on the house in question. The firm are gentlemanly, upright men, who will endeavor to merit a second call.

RAILROAD REGULATIONS.—The President and Superintendent of the Philadelphia, Wilmington & Baltimore Railroad, have recently published a volume of rules and regulations for the government of those connected with the road. It is especially worthy of notice from two considerations: First, from the care manifested throughout to secure regularity and safety as well as speed. Secondly, it is the first work of the kind we recollect to have seen in *book form*. It is handsomely printed on good paper, in large type, neatly bound, and properly classified and arranged. A copy is to be presented to each employée in the service of the company, and the manner in which it is got up will cause it to be preserved and read. We were much pleased to see in it a rule prohibiting the use of intoxicating drinks by those in the company's employ. There is no doubt that nearly all the "accidents," so called, are traceable to this worst foe of man. The road in question has always been free from those catastrophes so common on some roads, and it is evidently the purpose of its able officers, Mr. Felton, president, and Mr. Spafford, superintendent, to keep it so. A strict observance of these rules will accomplish so desirable an end.

HARLEM RAILROAD.—John D. Elliot, Esq., has succeeded Mr. Sloat as superintendent of this road. It has always been one of the best managed in the country, and has more trains pass over the southern part of it than any other road in the world. Accidents are very rare, and have always been traceable to the imprudence of the victims themselves. The company is now running two trains a day between New-York and Albany, leaving New-York at 7.39 A.M. and 2.45 P.M., and Albany at 5 A.M. and 3.45 P.M. It passes through the rich agricultural counties of Westchester, Putnam, Duchess, Columbia, and Rensselaer, affording the passenger a view of the most pleasing and interesting objects, over its entire length. The cars are convenient and handsome, the conductors gentlemanly and courteous, and the speed such as to meet the wishes of any reasonable man. Should the reader be passing between these two cities, let him by all means give the Harlem Railroad a trial.

NEW DRAWBRIDGE SIGNAL.—We were recently shown a drawbridge signal, invented by Simeon L. Spafford, Esq., Superintendent of the Philadelphia, Wilmington, & Baltimore Railroad. It was the model which we inspected, although the signal itself is in use at every bridge on the above road. Its merits consist in its always showing the proper colors on four sides, and on being so constructed that it can not be easily misplaced. It is above the draw, in the centre, and exhibits four sides, or a lantern which can be seen at a great distance. Its operation is simple yet effectual, and we shall not be surprised to see it come into universal use. Mr. Spafford has taken the necessary steps for obtaining a patent for it, and will be glad to communicate with parties wishing to adopt it. His post-office address is Philadelphia.

AN IMPROVED PIANO.—I have hardly space left to allude to a new and remarkable invention. It is a contrivance for giving to the piano the only quality it wanted—a prolonged sound. For ten years it has been sought for in vain. It was impossible to make the piano SING, by obtaining from it a sustained note, like the human voice or the violin. Thalberg's great merit, beside his unrivalled execution, was his manner of at least approaching, upon the piano, the "sostenuto," indispensable in many kinds of music. The invention is very simple, and it is efficient and infallible. The inventor is M. Alexander, the manufacturer of the organ-melodeon, and the first specimen of it is intended for Liszt.—*Paris Letter to the N. Y. Times.*

LIGHT IN DYEING.—An English artisan proposes to employ the chemical agency of light in dyeing or staining textile fabrics; the cloth, whether wool, silk, flax, or cotton, being first steeped in a suitable solution, then dried in the dark, and subsequently exposed to the action of light, those parts which are to form the pattern being protected by pieces of darkened paper, or some other suitable material, fastened to a piece of glass. When the desired effect is produced, the time for which varies from two to twenty minutes, the fabric has to be removed, in order to undergo a fixing operation, while a fresh portion of it is exposed to light.

PENNSYLVANIA RAILROAD TUNNEL.—The tunnel which has just been completed on the line of the Pennsylvania Central Railroad passes through the summit of the Alleghany Mountains at a point known as Sugar-Run Gap. It lies in the counties of Blair and Cambria—the summit being the dividing line. It is 3612 feet long, 2685 feet of which is arched, containing 7700 perches of cut stone and 6400 perches of brick masonry, and 927 feet is cut through the solid rock where arching is unnecessary. Eight feet of the arch on each side is built of cut stone 22½ inches thick, resting on abutments of rock-range work of the same thickness, and the crown consists of five courses of hard-burnt brick—the whole laid with hydraulic cement. At grade, the width of the tunnel in the clear is 21 feet—ten feet above the grade, 24 feet. The height above the grade is 23 feet. The greatest elevation above tide is at the west end of the tunnel where the height is 2161 feet. The grades ascending the eastern slope commence at Altona, and in a distance of 12 miles, where the west end of the tunnel commences, the height overcome is 998 feet, or 82¾ to the mile.

THE MINERALS OF TENNESSEE.—East-Tennessee, as we learn from the *Knoxville Whig*, is three hundred miles in length by one hundred in width, and embraces within its limits thirty counties. From Marion county to the county of Anderson, and beyond that for the distance of two hundred miles, stone coal, iron ore, lead, and other valuable minerals abound in profusion. This region is watered by the Tennessee and Clinch rivers, which are navigable for steamboats during nine months of the year. In Anderson, Campbell, Claiborne, and Hawkins counties, salt, coal, and iron exist in abundance. On the south side of the Holstein river, discoveries are made daily of iron, lead, silver, copper, and coal. In Polk county twelve copper-mines are in operation, most of which produce ore (so says our contemporary) of a quality richer than the mines of Lake Superior. For this ore $170 per ton is realized. The cost of transportation to New-York is $21.50. The copper business is the most profitable in that section. During the month of April four of these mines shipped six hundred tons of ore, equivalent in value to $102,000.

NEW MANUFACTORY OF AGRICULTURAL IMPLEMENTS.—David Landreth, of the farm and garden seed store, 23 South Sixth street, Philadelphia, has commenced the manufacture of agricultural implements by steam, at Bristol, Pa. His warehouse is in Philadelphia, at his seed-store.

CLEMENT'S LIVE-STOCK AGENCY.—Aaron Clement, who conducts a live-stock agency in South street, Philadelphia, has recently sold a number of cattle, sheep, poultry, etc., etc., to Hon. John Wentworth, of Illinois, better known as "Long John." Mr. Wentworth has purchased a large tract of land near Chicago, which he is stocking in the best manner from Mr. Clement's agency.

SUBLIMELY RIDICULOUS: GEORGIA AND OHIO BABY-SHOWS.—If any are disposed to bring annual agricultural fairs into utter contempt, no better or more rapid process can be devised, in our opinion, than by the baby-shows of some of our friends in Georgia and Ohio. If they can not excite an interest in their fairs by any better means, they had better renounce them altogether.

If they really profess to be in earnest on this subject, they had better go into it business-fashion, and detail all the peculiar conditions of both parents, *in et ab initio*, and the peculiar habits of each, which may be supposed to aid in the happy result; and as it is supposed that surrounding scenes and persons viewed by the mother during certain periods have an effect on the quality of her offspring, we ought to know whether the scenery viewed by the candidate was beautiful or not, and whether her associates were handsome or lively, or graceful, etc., etc. Go into these matters physiologically and psychologically, or leave them for other professions. Whether the mother wore stays or not, would be quite an interesting question to — some. Whether she ate meat or saw-dust; whether she habitually took exercise, etc., etc. We will furnish a list of inquiries for investigation whenever requested by the proper authorities.

In addition to the criticisms copied below, we would respectfully beg leave to inquire whether the weight of the father, or mother, or both, should not be taken into the account. Is not the one hundred-pound mother who produces a ten-pound baby as meritorious as a hundred and fifty-pound mother who *grows* one of twelve pounds? But we forbear. The *subject* grows on our hands. Now for the extracts:

But we are moved to these remarks by noticing the following, from the *American Agriculturist*, which is also commented upon in the paragraphs appended thereto in the *Louisville Journal*.

"A GREAT BABY-SHOW: *What constitutes the Prettiest Baby?*—The Stark County (Ohio) Agricultural Society are offering premiums for the finest specimens of Young Americans. Here is the list:

For prettiest baby, $5 and diploma to mother; for 2d prettiest baby, $3 and diploma to mother; for 3d prettiest baby, $2 and diploma to mother; for largest and heaviest child, under twelve months old, age to be considered, $5 and diploma to mother; for 2d largest and heaviest child, under twelve months old, age to be considered, $3 and diploma to mother; for third largest and heaviest child, under twelve months old, age to be considered, $2 and diploma to mother.

The above is not a fair list; all the rewards go to the mother—no encouragement to fathers.

Before this exhibition comes off, the above Society ought to define what constitutes the 'prettiest baby;' otherwise exhibitors will be altogether in the dark as to what they are to show for; whether fat, or lean, or fair condition; black, blue, or gray eyes; black, brown, flaxen, red, or auburn hair; pale or rosy cheeks; small or large feet and hands; long or short in the neck and body; thick or thin through the chest; round or square shoulders, etc.

All the above matters should be laid down in a 'Scale of Points,' on the same principle as established by the New-York State Agricultural Society, in judging of improved stock at their annual exhibition. It would be well also to have this 'Scale of Points' accompanied by a 'model baby,' chiseled in marble for the form, and with a painted ditto for color, etc.; then the committee would have some basis on which to found their judgments, and we might look forward to some improvement in the breed of the *genus homo* quite as sanguinely as we do now for that of the lower grades of animals; and Heaven knows that there is need enough of that in this wicked world, degenerate as it is, morally and mentally as well as physically.

If a satisfactory 'Scale of Points' and 'models' could be adopted by the agricultural societies in these matters, the conducting editors of this journal might be tempted to make an entry for premiums, as each has been blessed the past month with what they consider a pair of 'models' of the first order.

We copy the above from the *American Agriculturist*. We fully concur in the editor's suggestions.

We most heartily congratulate our friends of the *American* upon those cheer-

ing events of the past month, particularly the *senior*. To be thus blessed at this period of his days is a blessing indeed, and one which inspires *us* with hope, hope even in our declining years.

We believe to Springfield, Mass., belongs the honor of first introducing baby-shows; but the Southern Central Agricultural Association of Georgia entirely eclipse our Ohio neighbors in their scale of premiums. The following are among the premiums to be awarded at their next fair the coming fall:

1st Premium.—Silver pitcher, $50, for the handsomest and finest babe two years old.

2d Premium.—Silver pitcher, $25, for the handsomest and finest babe one year old.

3d Premium.—Silver goblet, 10, for the handsomest and finest babe six months old.

The children to be clothed in domestic fabrics; the premiums to be awarded under the direction of the executive committee.

Georgia! yes, Georgia—it's a great country, and the Georgians are a great people. We have a friend who was born in Georgia, and who is a day's journey around the middle and three feet around the leg—he's married, too, but alas! has no babies. No doubt if he had, his would come in ahead for the first prize.

We hope these shows of young live-stock of the *genus homo* will prosper, until finally we shall have a grand National Baby Fair; then let all creation stand back for Old Kentuck. We have the authority of a friend for saying that Bourbon County, for a union of fat and beauty, can beat all the world and the rest of mankind. We expect, in view of this interesting show, a great matrimonial stampede. It is not expected that the exhibition will come off for a couple of years yet, and *candidates need not be in a hurry—there will be plenty of time to prepare.*"

Oblique Railroad Wheels.—The Paris correspondent of the *New-York Daily Times* says:

"One of the most interesting sights in Paris, and one that no American ever thinks of visiting, as he probably never heard of it, is the railroad from the Barrier d'Enfer to Sceaux. It is but seven miles long, and was built as an experiment upon a new system of wheels. The engine, tender, and hindermost car of the train are furnished with oblique wheels, under the ordinary upright ones. Where the track is straight, these do not touch the rails; but at the curves they come into play, rattling along the inner edge of the rails, and preventing the train from running off the track. The road was therefore made purposely tortuous, and the most sudden and seemingly dangerous bends were introduced at frequent intervals. The two stations are circular, and the train, as it receives its passengers, is doubled up into a ring of 50 feet radius. The smallest curve upon the road is 68 feet radius, and over this the train goes at full speed. The corners of the cars are cut off, so that the vehicles, in following the curves, do not infringe upon each other. Sceaux is upon an eminence, which the road ascends spirally, with something like a mile of track—it only going, in advance, a hundred feet. The invention—which, by the way, is ten years old—has proved practically very successful; but it has never been applied to any extent."

[We do not see why an invention, which is exhibited in the English department of the Crystal Palace, is not identical with that here described. It may be that the two inventions differ as to the extent of contact with the rail; but we still think them the same. If they are the same, we fully indorse for them. That exhibited at the Palace we consider a capital contrivance. But it costs something, and that is objectionable, while so many roads are constructed on paper securities.—Eds. P., L., and A.]

The Culture of Strawberries.—The New-York Horticultural Society, at a recent conversational meeting, arrived at the following conclusions in regard to the best method of cultivating strawberries:

"The best soil for the strawberry was stated to be a gravelly loam. The land should be well drained, and to every acre applied twenty bushels of unbleached

ashes, ten bushels of lime, and two or three pounds of salt. The ground should be well broken up; animal manures should be eschewed; leaf-mould is the best, and this should be carefully spaded in. About the first of July is the best time to set out the plants. In doing this, pains should be taken to have them firmly rooted. The rows should be eighteen inches apart, and the plants a foot apart. Sometimes it will be well to allow greater interval, in which case the interstices can be filled up from the growth of the runners. After setting out the plants, throw on a covering of tan-bark an inch or an inch and a half in depth, then water them plentifully, and the moisture will be retained a long time. After cold weather comes on, cover the strawberry-beds and the walks with clean straw, throwing over a little brush, or something to keep the straw in its place. In the spring remove the straw and make use of some fertilizing agent to give the plants vigor, as sulphate of soda, sulphate of ammonia, or nitrate of potash. Keep the roots out, see that the plants are bountifully watered, and let nothing intervene to disturb or retard their growth till you gather the fruit. The beds should be made over as often as every three years."

Victoria Bridge.—The work, now fairly commenced, is without exception the grandest work of its kind on this continent. When Stephenson first projected a tubular bridge across the Menai Straits, people shook their heads, and doubted the possibility of accomplishing such a work. When the Britannia bridge was completed, people came from all parts of Europe to inspect the wonderful structure. Steamboat excursionists *via* London and Chester were equally loud in praise of this wonderful work. Up to this very moment, it constitutes, with the Menai Suspension Bridge, one of the great attractions of the district, and the traffic in excursionists alone is immense.

The Victoria Bridge over the St. Lawrence will form a still more grand and important object of attraction, because of its being a far more surprising work of art. Thus the Britannia bridge, thrown from cliff to cliff, has natural ramparts on which to rest. The low shore of the St. Lawrence does not present the same advantages to the engineer which are to be found where the bold cliff of the Island of Anglesea is separated from the equally bold cliff of the Welsh main, by this arm of the sea. To those who have not seen the Britannia bridge, but who have seen the Suspension bridge at Niagara Falls, we may say, that the cliffs at Niagara are not unlike in formation those that border the Menai Straits, so that the tubes rest upon buttresses of solid rock. In the one case, nature has prepared the place to the hand of the engineer; in the other, every thing has to be done by the art and science of the engineer; and yet, in spite of these natural difficulties, the engineer proposes to throw a tubular bridge, two miles long, over this noble river, with a centre arch, one hundred feet high, over the only navigable channel of the river. A more stupendous and noble work could hardly be conceived; and we should be dull observers, if we did not believe that it will, when completed, take its place, and be ranked beside the Tunnel under the River Thames, the Menai Suspension bridge, the Britannia bridge, and other monuments of human ingenuity which are visited by pilgrims from distant lands, as abiding trophies of human genius and labor, and which administer more largely to the prosperity of the localities in which they are placed than those who take a narrow view of the subject could possibly imagine. A few years hence, this very bridge may be one of the greatest attractions to bring the tourist and visitor to Montreal.—*Montreal Herald.*

What our Country pays for Guano.—The *Genesee Farmer* says: The quantity of guano which will be brought to the United States this year will be about 200,000 tons.

Two hundred thousand tons of guano purchased at fifty-five dollars a ton (the present price in New York) will take out of the country eleven million dollars for imported manure. For a comparatively new country, this is a startling fact. All the corn and corn-meal exported in the last fiscal year amounted to less than two and a half million dollars. When will our people see the folly of wasting so much of the elements of crops in almost every rural district, and then sending to the west coast of South-America, for ten million dollars' worth of manure!"

MUSICAL INSTRUMENTS.—Amid the various manufactures that within a few years have sprung into being in this country and become a permanent branch of American Industry, may be classed the manufacture of instruments of music, especially the Piano-Forte, of which there are now made in the cities of New York and Boston, annually, about 12,000, varying in price from $200 to $1000 each. This gives employment to thousands of industrious mechanics, as well as to thousands of waiting capital, good proof of the increased culture of the art and science of music. At the rate of our present progress, may we not judge that the time will come when poetry will be but half finished without its corresponding musical expression to give utterance to its life and soul? But we commenced this paragraph simply to mention a fact. Having seen by the report of the last Great Fair of the Mechanics' Association in Boston, that the first Premium for the best Square Piano-Forte was awarded to Messrs. Woodward and Brown, of that city, and that the Committee at the last Fair of the Worcester County Society, at Worcester, had awarded the same makers the first premium over all others, we were induced to improve a few leisure moments while in that city a while since, by visiting their establishment. It is one of the best organized and most neatly arranged for easy management that we have ever seen. Messrs. W. and B. are both practical working men, of long experience in all branches of their business, and employ from seventy-five to one hundred hands in connection with the most approved machinery. A toning machine, and a machine for winding their strings, were particularly neat and compact. Their arrangement for stowing cases on rollers, one above the other, to save room, and also their mode of making racks for the piano tops, is worthy of imitation by makers doing even a small business.

When all manufacturers of these and other instruments shall make similar efforts to produce the highest mechanical and acoustic results, we shall get rid of thousands of jarring and unharmonious wire boxes which are not only a waste of lumber but a positive nuisance in many a town and village.

A NEW MOWING MACHINE.—Mr. Fisk Russel, of Boston, a practical mechanic of large experience, has invented a mowing machine which differs in several particulars, both in principle and construction, from those now in successful operation, and decided advantages are claimed for it. The driving-wheel is the same as in Ketchum's; but the vibratory motion is obtained from a wheel consisting of a series of cams, by the undulating rim of which a lever is made to move the knives. The knives are each separate, and play upon a steel pivot, acting as they vibrate like a pair of shears. The frame of the machine is supported by a second wheel of the same size and attached to the driving wheel, which renders the movement of the machine more steady, and obviates, in a great measure, the side draught.

The machine was tried last week on the farm of B. B. Kirtland, of Greenbush, and did its work admirably. There was no clogging, and apparently less power was required to operate it than other machines. It is simple in its construction, and works with very little friction. Mr. Russel intends to devote the remainder of the hay season to experiment with perfecting his machine, and it will not be offered for sale till another year. Any judgment as to the superiority of the machine would be premature until further trial has been made, but it certainly promises to be a valuable labor-saving implement.—*Boston Cultivator.*

TESTING MARBLES.—A Washington letter-writer states that in the basement of the Smithsonian Institute there is a room where marbles are scientifically tested. Specimens from all parts of the world may be seen there, cut into squares and cubes. To prove their strength they are tested in a crushing machine. That which is brought from Lee, Mass., is said to be the strongest and best in the country for building purposes. But the marble is not tested by pressure alone. They try it also by acids, by water, by drying, etc. They have scales to weigh the crystals in, which are so delicate that ten thousand of its smallest weights are required to make an ounce. The index-tablet, for telling the weight is so fine that its movement has to be examined by a very powerful microscope, to discover the variations.

How to Clean Animals and Plants of Vermin.—The *Agriculture* publishes a letter from M. Raspail, giving an account of a plan for destroying vermin on animals, and also on trees and plants. The process he recommends is to make a solution of aloes, (one gramme of that gum to a litre of water,) and by means of a long brush to wash over the trunks and branches of trees with this solution, which will speedily, he says, destroy all the vermin on them, and effectually prevent others from approaching. In order to clean sheep, or animals with long hair, they must either be bathed with this solution, or be well washed with it. The writer mentions several trials which he made of the solution with the most complete success, and very strongly recommends it to general use.—*London Advertiser.*

North-Western Pomological Convention.—The next annual meeting of this Association will be held at Burlington, Iowa, commencing on the last Tuesday (the 26th) of September, at 10 o'clock A.M., and continuing four days. Communications on any or all branches of horticulture are solicited, which, together with any boxes of specimens, may be directed to the "N. W. Pomological Convention, care of Messrs. Avery, Burlington, Iowa."

By order. F. K. Phœnix, *Cor. Sec.*

New Printing Press.—Mr. Stephen Brown, of Syracuse, has invented an ingenious press for printing four different colors simultaneously. The Syracuse *Journal* says of it: "The inking apparatus, and the principles of the machine, are so arranged that four different colors can be printed at one impression, at the rate of about five hundred impressions an hour. And not only can different lines and letters be printed in various hues, but so perfect is the invention, that one letter may be printed in two, three, or four colors, or be printed in one color and shaded by another, all with the same impression."

General Agency.—The publisher of *The Plough, the Loom, and the Anvil*, believing it in his power to be of essential service to the readers of that journal, in the purchase or sale of various articles, and the transaction of various kinds of business, would announce to them that he is ready to execute any such commission which he may receive, including the purchase of books of any description; implements connected with agricultural, manufacturing, or mechanical operations; artificial manures; farm and garden seeds, etc., etc. One of the gentlemen connected with the journal is a proficient in music, and experienced in the selection of piano-fortes, flutes, etc., and will execute orders in that department.

He will also act as agent in the purchase and sale of Real Estate.

☞Particular attention to business connected with the Patent-Office.

Letters of inquiry on these matters will be promptly attended to.

NEW BOOKS.

Fifty Years in Both Hemispheres; or, Reminiscences of the Life of a Former Merchant. By Vincent Nolte, late of New-Orleans. Translated from the French. New-York: Redfield. 1854.

This is a remarkable volume. It gives the details of the life of one engaged in some of the greatest financial operations of the French government in the early part of the present century, including the period of the First Consul, and carried on in France, Germany, England, Spain, and the United States. The largest bankers were agents in these immense transactions. Incidental to these matters, many anecdotes are given of prominent persons in both hemispheres. Whether the author is entirely accurate in his statements we can not say, but his representations do not always agree with those given in more formal history. But whether every statement of fact or of opinion is correct or not, the book has peculiar attractions for all interested in the political and great financial operations, especially at the French court, of the last "fifty years."

HISTORY OF CALIFORNIA, from its Discovery to the Present Time, with a New Map of the Country. By E. S. CAPRON. Boston: John P. Jewett & Co. Cleveland, Ohio: Jewett, Proctor & Worthington. 356 pp. 12mo. 1854.

THIS handsome volume is a valuable addition to the works on this subject. It describes the climate, surface, soil, agriculture, commerce, mines, and mining, with an account of its animals, birds, and fishes. The new map is also valuable, and is very handsomely executed. It is by Colton. The description of the voyage from New-York, and the return, will possess interest to some readers.

GAN-EDEN; or, Pictures of Cuba. Boston: John P. Jewett & Co. 12mo, 284 pp. 1854.

THIS, too, is a remarkable specimen of mechanical skill. Few works are so well executed. It is not a history, but a sort of off-hand sketch of the sights and sounds which attract the attention of a traveller in that luxurious island. The style is perhaps a little stately, but the reader will be interested in every chapter, and the knowledge communicated will be quite extensive.

HISTORY OF CUBA; or, Notes of a Traveller in the Tropics, etc. By MATURIN M. BALLOU. Illustrated. Boston: Phillips, Sampson & Co. 12mo, 230 pp.

THE first three chapters of this volume contain a short sketch of the political history of Cuba. The remainder consists of "the fresh memories" of one who had, for a time, a residence upon the island. The details are somewhat more numerous than those of "Gan-Eden," but, like all original accounts of the same thing, they are alike in many of the incidents, and unlike in the general form of narrative. They nowhere contradict each other on matters of fact, though they differ in opinion as to the practicability of effecting a revolution from without. The monteros, or humbler farmers, seem to be the most contented class.

LECTURES ON ROMANISM. By REV. JOHN CUMMING, D.D. Boston: John P. Jewett & Co. 12mo, 728 pp.

THESE Lectures were first delivered at the Hanover Rooms, in 1850. They have since been "re-cast," "strengthened," and some of them "re-written" by their author, and they now exhibit, most decidedly, the coolest and acutest logic, and the most careful and thorough investigation, in reference to the doctrines of the Catholics and Tractarians, that we have ever seen. He who overthrows the argument of this book, will have no occasion to look for further antagonists on the points here discussed.

THOUGHTS AND THINGS AT HOME AND ABROAD. By ELIHU BURRITT, with a Memoir by MARY HOWITT. Boston: John P. Jewett & Co. 12mo, 364 pp.

THIS volume consists of a re-print of many of those admirable "thoughts and things" written by Mr. Burritt, and published in various journals in this country and in England. Among these are "Thought-tracks; or, Why I left the Anvil," in which Ezekiel says such capital things. The topics discussed, of course, are various, and some of the author's reforms do not commend themselves to the minds of every body. But every body will here find enough which they will approve, to cover many times the price of the book, and some of the balance may do them no harm.

A. E. MÜLLER'S PIANO METHOD. Revised by JULIUS KNORR. Translated from the German, by G. A. SCHMITT. Boston: Oliver Ditson.

WE find in this volume the most satisfactory system of piano instruction we have ever seen. Every step is clear, and progress seems inevitable. Long popular in Europe, this work needs but to be known to become equally so in this country. We advise teachers and scholars to examine Müller's Method, confident that such an examination will lead to its adoption.

SUBSTANCE AND SHADOWS; OR, Phases of Every-Day Life. By EMMA WELMONT, author of "Uncle Sam's Palace," etc., etc. Boston: John P. Jewett & Co. 1854.

THIS volume consists of a series of stories, entirely disconnected, of various degrees of merit, but none without interest. Together, they form a very entertaining book, well worth the notice of the reader.

SUNNY MEMORIES OF FOREIGN LANDS. By Mrs. HARRIET BEECHER STOWE. Boston Phillips, Sampson & Co. 2 vols. 1854.

THIS book is now too well known to need description. The writer gives the picture of her own bright thoughts and imaginings in her own style, and what that style is the readers of Uncle Tom need not be told. These volumes can not fail to be read with great interest.

THIS, THAT, AND THE OTHER. By ELLEN LOUISE CHANDLER. With Illustrations by Rowse. Boston: Phillips, Sampson & Co. 412 pages, 12mo. 1854.

THE copy before us is the seventh thousand. The verdict of the public is therefore pronounced already, and with good style and good sentiments throughout, such a verdict is next to infallible. The fair author says her "Flowers are the violets of spring, rather than the splendor of summer or the mellow ripeness of autumn." At any rate, they form a very pretty bouquet.

PHOTOGRAPHIC VIEWS OF EGYPT, PAST AND PRESENT. By JOSEPH P. THOMPSON. Boston: John P. Jewett & Co. 1854. 12mo, 358 pages.

THIS volume is partly descriptive and partly historical. The style is smooth, though a little tumid. The whole is no doubt the result of careful reading and judicious observation, and presents a clearer view of that wonderful country than can elsewhere be found in so condensed a form.

AN ART-STUDENT IN MUNICH. By ANNA MARY HOWITT. Boston: Ticknor, Reed & Fields. 12mo, 470 pages. 1854.

THIS book is peculiarly entertaining. The author was occupied in the study of art, in the city of Munich, and here relates with entire freedom her "beautiful and happy experiences." It is admirably done, and while these pages witness a true joy in the heart of the writer, the reader of taste can not fail to be a partaker in that joy. We would emphasize our words, when we say we most cordially commend this book.

THE AMERICAN TEXT BOOK OF PRACTICAL AND SCIENTIFIC AGRICULTURE, intended for the use of Colleges, Schools, and Private Students, as well as for the Practical Farmer, including Analyses by the most Eminent Chemists. By CHARLES FOX, Editor, etc. Detroit: Elwood & Co. 1854. 12mo, 352 pages.

WE have not for a long time examined a book on agriculture with so much pleasure as this. Its plan is new, in a good measure, and is just what we have long felt was wanted, while the statements of matters of fact or of science are carefully expressed.

Each crop, whether grain or fruit, is treated by itself. The proper soil, mode of culture, etc., are stated with due care and detail, while the uses of the different growths, straw, root, etc., are also described, and the enemies to be encountered by each.

Every farmer should own a copy. It is for sale by D. Appleton & Co., of this city.

FRUITS AND FARINACEA, THE PROPER FOOD FOR MAN, ETC. By JOHN SMITH. With notes and illustrations by R. T. TRALL, M.D. From 2d London Edition. New-York: Fowler, Wells, & Co. 12mo, 308 pages. 1854.

WE are no Grahamite, but in belief and practice have always been opposed to the doctrines here enforced. But we must confess ourself more impressed with the argument of this book than with that of all others we have ever read. The author's opinions are presented with remarkable conciseness, the facts and the entire logic of the book are stated with great fairness, and it is often much easier to deny than to disprove his conclusions. Those who agree with the opinions here set forth can not have a better magazine from which to draw their weapons of attack or defense.

List of Patents Issued

FROM JULY 8 TO AUGUST 8.

Geo. B. Hartson, of New-York, for improvement in making wrought-iron car-wheels.

Charles M. Guild, Brooklyn, for gas-heating apparatus.

Elisha French, Braintree, Mass., for coal-sifter.

Martin V. B. Darling, Providence, for improved slide-valve motion of steam-engines.

C. W. Crozier, Knoxville, Tenn., for improvement in camphor wash mixtures.

Collins B. Brown, Upper Alton, Ill., for improvement in harvester-rakes.

C. F. Brown, Warren, R. I., for improved implement for blasting rocks.

John B. Wickersham, New-York, for improvement in foundation for pavements.

John M. Thompson, Taunton, for improvement in parallel motion for beam-engines.

J. B. Smith, Milwaukee, for machine for mortising sash-stiles.

Gustavus Runge, Philadelphia, for improvement in trap-doors.

David Rankin, Augusta county, Va., for method of applying water to compound buckets of flutter-wheels.

Robert G. Pine, Newark, for improvement in plating metals.

Charles F. Packard, Greenwich, Conn., for improved sawing-machine.

Wm. McCord, of Sing Sing, for improvement in horse-powers.

A. Mayer, Philadelphia, for improvement in gas-stoves.

H. L. Lipman, Philadelphia, for improvement in cyclet-machines.

A. Lyon, Worcester, for improvement in lightning-rods.

S. Hunt, Baltimore, for improvement in apparatus for detaching harness from horses.

Hiram W. Hayden, Waterbury, Conn., for improvement in ornamenting metallic buttons.

Jonathan Ball, New-York, for improved mode of connecting water-pipes.

H. Crosby and Seth E. Crosby, Gustavus, Ohio, for improved mode of arranging arch-boards for cistern-arches.

James A. Cutting, Boston, for improvement in photographic pictures on glass.

General F. Foote, Buffalo, for improvement in ventilating railroad cars.

H. P. Gengember, Alleghany City, for improved cement of boiled coal-tar and earths.

Robert T. Fry, Spring-Garden, Pa., for improvement in the construction of inkstands.

Rufus Porter, Washington, for chair-cane.

J. Rabbeth, East-Hartford, for improvement in diaper-pins.

Thos. B. Smith, Truine, Tenn., for improvement in cow-catchers.

Franklin G. Smith, Columbia, Tenn., for improvement in condensers for steam-engines.

Josiah M. Smith, New-York, for improvement in machines for planing stone and metals.

Willett Thompson, New-Haven, Conn., for ship-ventilator.

Wm. H. Fullerton, Louisville, for improvement in machines for hackling corn-husks.

George Wright, New-England Village, Mass., for improvement in self-acting mules for spinning.

Peter Sweeney, Buffalo, for hot-air furnaces.

Washington Spangler, Harper's Ferry, assignor to himself, Edmund H. Chambers, and Wm. F. Wilson, of same place, for improvement in augers, gimlets, etc.

Thomas W. Gillett, New-Haven, assignor to J. Mathews, of New-York, for improvement in apparatus for corking bottles.

John W. Brewer, Cincinnati, for improved arrangement for mooring and managing balloons.

Ann G. V. McKinstry, Washington, administratrix and executrix of Wm. McKinstry, deceased, late of same place, for improved adjustable bearings for circular saws.

Eden A. Baldwin, second, administrator of the estate of Eden Baldwin, deceased, late of Templeton, Mass., for improvement in fire-arms.

Geo. A. Leighton, Boston, assignor to Nehemiah Hunt, of same place, for improvement in sewing-machines.

Thos. Clegg, Andover, assignor to himself and Nathaniel Stevens, of same place, for improvement in machines for making wire heddle-eyes.

Wm. J. Casselman, Vernon Village, New-York, assignor to Elias A. Swan, of New-York, for improvement in machines for carving marble, stone, etc.

A. G. Gallahue, New-York, for improvement in machines for pegging boots and shoes.

Russell D. Bartlett, Bangor, for machine for making the heads of shovel-handles.

Andrew Lanergan, Boston, Mass., for improvement in lanterns.

Chas. Mettam, New-York, for improvement in construction of iron houses.

Joseph J. Martin, New-York, for improved grapple for raising sunken vessels.

Henry Outcalt, Wilmington, Ohio, for improved mode of constructing metallic-roofing.

Wm. Loughridge, Weverton, Md., for improved arrangement of means for freeing canal-boats from water.

Wm. Lowe, Hartford, for improvement in operating cut-off valves of steam-engines.

James C. Kennedy, Albany, for elevated oven.

Abel Greenleaf, Kingston, Pa., for improved impact water-wheel.

Joel Green, Cincinnati, for improvement in apparatus for sealing cans.

Robert W. Genung, Blooming-Grove, N. Y., for improvement in lifting-jacks.

Wm. P. Chadwick, Edgartown, for improvement in oil or blubber-presses.

Stillman A. Clemens, Springfield, Mass., for improved valvular arrangements for diaphragm pumps.

Alfred Burwell, Rochester, for improvement in machines for stretching shoes, etc.

Adolph Brown and Felix Brown, New-York, for improvement in hat-shapers.

F. B. Smith, Craigsville, N. Y., for improvement in lifting-jacks.

Albert S. Southworth and Josiah J. Hawes, Boston, for improvement in taking daguerreotypes for stereoscopes.

R. H. St. John, Columbus, Ohio, for improvement in bedstead-fastenings.

Willis Straw, Dalton, N. H., for improved chain-hook.

George R. Snow, Buffalo, for improved mode of ringing bells by steam.

Jabez C. Berry, Springfield, Mass., for improvement in screw-wrenches.

Thomas B. Woodward, Kensington, Pa., for improvement in mills for grinding.

Moses D. Wells, Morgantown, Va., for improvement in brakes for light vehicles.

Wm. E. Ward, Port Chester, for improved mode of manufacturing slats for window-blinds.

John Stouffer, Peter Brough, and John W. Barr, of Chambersburg, for improvement in flouring and bolting.

Orrin W. Fiske, Dedham, for improvement in machinery for making pasteboard.

Jacob J. Hatcher, Philadelphia, for improved pen and pencil-case.

Matthew Walker, Sr., Philadelphia, assignor to M. Walker & Sons, of the same place, for improved iron picket-fence.

William E. Bird, of Cahawba, Ala., for improved steam-boiler.

Israel T. Brown, Columbus, Ga., for improvement in cotton-gin ribs.

Leander W. Boyton, South-Coventry, Conn., for improvement in machines for preparing blocks for felting.

Hugh Burgess, Kentish-Town, Eng., for method of coating iron with brass or copper.

Lewis R. Concord, Philadelphia, for improvement in block slide-valves for steam-engines.

Thos. Crossley, Boston, for improved method of making printing-blocks.

Samuel Champion and Thos. Champion, Washington, for improvement in bridge.

Joel A. H. Ellis and Alexander Gordon, Rochester, for improved mode of operating excavating machines.

Jacob Erdle, West-Bloomfield, N. Y., for improved wind-mill.

Roswell Enos, Woodstock, Ill., for improvement in tanning.

Geo. W. Griswall, Carbondale, Pa., for process of separating impalpable powder for paints.

F. Huston, New-Orleans, for improved mode of raising vessels.

Wm. R. Palmer, Elizabeth City, N. C., for improvement in horse-powers.

J. A. Rose and J. Lee, Philadelphia, for improvement in machines for scouring piece-goods. Patented in England, Feb. 17, 1854.

E. Murdock, Albany, for improvement in cutting tobacco.

Wm. G. W. Jaeger, Baltimore, for manufacture of lamp-black.

James Spratt, Cincinnati, for improvement in hermetical sealing.

Thos. Stubblefield, Columbus, Ga., for improvement in steam-gauges.

H. C. Stevens, Georgetown, Ky., for improvement in washing-machines.

Jacob Senneff, Philadelphia, for improvement in sheaver's heddles.

Wm. W. Smith, Marshall, Mich., for improvement in buckles.

A. Snyder, Hawley, Pa., for improvement in railroad car-trucks.

Geo. H. Smith, M.D., Rochester, for improved process for making steel direct from the ore.

Peter Spilman, Richmond, Va., for improvement in apparatus for laying off the scye in cutting garments.

J. F. Snyder, Culpepper, for improvement in metallic fire-places.

S. Tonelison, Pleasant Valley, N.Y., for machines for holding docks of horses.

P. B. Tyler, Springfield, Mass., for improvement in winding rope, cord, or yarn.

Chas. Watt, London, and Hugh Burgess, of the city of London, England, for improvement in the manufacture of paper from wood. Patented in England, Aug. 19, 1853.

Geo. F. Wilson, Providence, and Jas. M. Whitney, North-Providence, N. I., for improvement in machines for threading screws. Patented in England, July 18, 1854.

Mary Burns, of New-York, administratrix of Robert Burns, Jr., deceased, late of New-York aforesaid, for improved carriage-springs for light vehicles. Patented in England, June 7, 1853.

G. J. Wardwell, Andover, Maine, assignor to himself and Elmer Townsend, of Boston, Mass., for improvement in machines for pegging boots and shoes.

Albert H. Tingley, Providence, R. I., assignor to himself, Edmund W., and Harvey F. Tingley, of Providence, aforesaid, for improvement in machines for sawing stone and marble.

Charles R. Fox, Chicago, for improved sawing-machine. Patent dated May 9, 1854.

Samuel Eccles and James Eccles, of Philadelphia, for improvement in looms for weaving figured fabrics. Additional to original letter patent, No. 9168, dated Aug. 3, 1852.

R. D. Bartlett, Bangor, Me., new mode of manufacturing bricks.

W. S. Babcock, Stonington, Conn., for improvement in dumping-wagons.

E. A. Baldwin, Elmira, N.Y., for new tubular bridge.

William Bonny, New-York City, imitation marble.

N. A. Boynton, New-York, new arrangement for air-heating stoves.

J. W. Brown, West-Springfield, Mass., improvement in revolving fire-arms.

Wm. S. Chapman, Cincinnati, Ohio, India-rubber blocks to prevent wear and noise in running carriages.

Nathan Chapman, Mystic River, Conn., improved cotton-press.

Daniel Clare, Hammonsville, Pa., sawing and planing-machine.

Silas Constant, Brooklyn, N. Y., rosin-oil lamps.

Lewis Cutting, Lowell, Mass., stop-motion for speeders.

I. H. Davis, Morristown, N. J., process for making pigments from iron ore.

Joseph C. Day, Hackettstown, N. J., improvement in fire-arms.

G. C. Fisk, Dansville, N. Y., new method of tonguing and grooving boards.

O. N. Frary, Ansonia, Conn., improvement in melodeons.

J. G. Fulton, Middleport, Ohio, salt-packing machine.

John Gemmil, Mercer, Pa., radiators.

Josee Johnson, Fort Smith, Ark., improved brick-press.

Daniel Knight, Salem, Ind., new form of lock for fire-arms.

Wm. H. Merriwether, New-Braunfels, Texas, improved spring for bed-bottoms.

Joshua Merrill and George Patten, Boston, Mass., improved refrigerator for marine-engines.

J. S. McClelland, Jefferson, Ind., new method of arranging buggy-springs.

John McMurtry, Lexington, Ky., improved mode of making brick.

Stanislaus Millett, New-York City, improved sofa-bedstead.

N. Millington and D. S. George, Shaftsbury, Vt., new method of graduating carpenters' squares.

Alex. Moffit, Brownsville, Pa., spring-body car, riage.

Samuel Nicholson, Boston, Mass., new mode of setting and preserving wooden pavement.

J. Porter, New-York city, stone-dressing machine.

Christian Reif, Hartleton, Pa., clover-separator.

Cheeney Reed and Brooks K. Mould, Chicago, Ill., improved method of ventilating railroad-cars.

Luther and Potter G. Ross, Worcester, Mass., machine for cutting boot and shoe-soles.

Horace Smith and B. B. Wesson, Norwich, Conn., improved cartridges.

Ira Smith and John Stonesifer, Boonesboro', Md., improvement in lard-lamps.

T. B. Stout, Keyport, N. J., improved car-coupling.

A. G. Safford, Boston, Mass., sash-spring.

John Thompson. Marblehead, Mass., machine for cutting boot and shoe-soles.

Edward Turner, Baltimore, Md., new hame-fastener.

Philos B. Tyler and Benj. Lathrop, Springfield, Mass., furniture-castors.

Wm. Wickersham, Boston, Mass., self-heating smoothing iron.

Henry E. Woodbury, Washington, D. C., document-file or holder.

Peter Midgett, Hoosick, N. Y., shuttle-guard for power-looms.

Leroy S. White, Chicopee, Mass., improved roller for furniture-castors.

Alfred Swingle, assignor of Elmer Townsend, Boston, Mass., sewing-machine.

John Norton, Cork, Ireland, improved blasting-fuse.

Amos J. Saxton, Brooklyn, N. Y., improved method of constructing iron buildings.

Weatherell Taylor, Camptown, N. J., bushing-sheaves for ship-blocks.

Solomon W. Ruggles assignor of himself and A. R. Smith, Fitchburg, Mass., fan-blower.

Jas. A. Bazin, Canton, Mass., assignor of Alfred B. Ely, Boston, new braiding-machine.

Wm. Ball, Chicopee, Mass., gold-amalgamator.

Solomon Andrews, Perth Amboy, N. J., mail-bag labels.

T. R. and George Bailey, Lockport, N. Y., cutting round-tenons.

H. N. and J. C. Bill, Willimantic, Conn., securing helves in axes, etc.

Wm. Bradley, Lynn, Mass., nutmeg-graters.

E. W. Brown, Fall River, looms.

Henry T. Brown, Brooklyn, N. Y., bottles.

L. B. Carpenter, Buffalo, N. Y., lamp-fastenings.

L. S. Chichester, Brooklyn, N. Y., cotton-gins.

T. F. Chapin, Walpole, N. H., ploughs.

Wm. Clark, New-York, bottles.

John Clark, North-Hadley, Mass., spring and spring-catch for closing doors.

G. A. Colehamer, Reading, Pa., lubricating compound.

Thomas Coles, New-York, omnibus-step protector.

Charles H. Dana, West-Lebanon, N. H., cultivators.

George Deuble, Canton, Ohio, striking part of steeple-clocks.

C. W. Dickinson, Newark, N. J., finishing dies in machine for making rings from sheet-metal.

L. A. Dole, Salem, Ohio, lathe-chuck.

James and John Fishwick, Lexington, Ky., driving and straining saws.

Charles Folsom, Cambridge, Mass., reading-tables.

Alanson Gale, Poughkeepsie, N. Y., mowing-machine.

Samuel Gardiner, New-York, crushing and pulverising ores, etc.

A. J. Gibson, Clinton, Mass., vehicles.

Ezekiel Gore, Bennington, Vt., butter-workers.

G. W. Griswold, Carbondale, Pa., grates.

E. P. Gaines, Melrose, Texas, mill-stone dress.

B. T. Hall Seneca Falls, N. Y, water-wheel.

A. C. Harig and D. C. Stoy, Louisville, Ky., bank-locks.

M. A. Heath, Providence, R. I., windows.

Walter Hunt, New-York, shirt-collars.

Henry Jackson, Elizabeth, Ohio, steam-boilers.

W. G. Laners, New-York, securing ends of wires in fence-posts.

Griffith Lichtenthaler, Limestoneville, Pa., cultivator.

H. L. Lipman, Philadelphia, eyelet-machines.

N. B. Livingston, Portland, Ind., coupling for carriages.

John Lyon, Harrisburg, Iowa, ditching-ploughs.

Jordan L. Mott, Mott-Haven, N.Y., securing staples to walls.

J. R. Nichols, Haverhill, Mass., soda-water fountain.

Alphonse Quantin, Philadelphia, Pa., stoppering mineral-water bottles.

Washburne Race, (assignor to H. C. Sleby and Washburne Race,) Seneca Falls, N. Y., stove-regulators.

Elihu Ring, Mecklenburgh, N. Y., butter-workers.

Elnathan Sampson, Windsor, Vt., platform-scales.

J. W. Smith, Poultney, Vt., sheet-metal candlestick.

Isaac Straub, Cincinnati, Ohio, corn-cob cutter.

David Stouder, New-Burlington, Ind., ditching-spade.

William H. Towers, Philadelphia, Pa., horse-shoes.

John E. Vansant, Louisville, Ky., indicating-tubes for ascertaining draught of and for trimming vessels.

Abraham Van Antwerp, Albany, N. Y., paddle-wheels.

Charles A. Wakefield, Plainfield, Mass., seed-planters.

Benjamin Webb, Unadilla Forks, N.Y., polishing wheels.

Charles Williams, Fallsburg, Va., fitting heads in boxes.

Simon Willard, Cincinnati, Ohio, portable bedsteads.

Daniel Willis, New-York, apparatus for cooking and warming.

Leonard Woods, Quincy, Ill., hedge-trimmer.

Daniel Zeigler, Lewistown, Pa., cider-mills.

Daniel Wilson, assignor, etc., Milford, N. H., thimbles for stove-pipes.

Birdsill Holly, Seneca Falls, N. Y., mortising-machine.

Thomas Brown, London, Eng., working and stoppering chain-cables.

Elkan Adler, New-York, making matches.

Wm. Little, England, a lubricating material.

C. F. Bauersfield, Cincinnati, Ohio, bits for carving-machines.

C. B. Baker, Troy, N. Y., brick-press.

R. C. Bristol, China, Mich., improvement in steam-boiler tubes.

G. W. Cherry, New-York, stone-saws.

E. and J. R. Cushman, Amherst, Mass., drying hick paper.

Wm. Cayce, Franklin, Tenn., door-locks.

Jer. Carhart, New-York, uniting plates of metal of unequal thickness.

John Carton and Jos. Briggs, Utica, N. Y., hot-air furnaces.

Ari Davis, New-York, magneto-electric machines.

H. C. Deputy, Michigan City, draughting and modelling vessels.

John J. Efferenn, Springfield, Mass., sawing fire wood.

Phineas Emmons, New-York, moulding crackers.

Josiah Eells, Pittsburg, Pa., revolving-breech fire-arms.

John E. Earle, Leicester, Mass., compasses and callipers.

W. K. Glover, Glascow, Ky., metallic pens.

Isaac Gregg, Pittsburg, Pa., brick-presses.

B. F. Gold, New-Haven, Conn., lathing buildings.

A. J. Gibson, Clinton, Mass., attaching thills and poles and whiffle-trees to vehicles.

Joseph Hyde, New-York, washboards

J. M. Hathaway, New-York, shot-pouches.

D. A. Hopkins, Elmira, N. Y., railroad-car couplings.

Wm. F. Ketchum, Buffalo, N. Y., submerged paddle-wheels.

Wm. Henry Morrison and M. W. E. Dorane, Indianopolis, Mich., mortising-machine.

Willis Mansfield, New-Haven, Conn., switch-fenders.

William Watson, New-York, stone and marble-saws.

Benj. F. Bee, feed-water apparatus for steam-boilers.

G. W. Coats and J. Russel, Springfield, Ohio, machines for striking card-teeth.

Halvor Harrison and Horace Barnes, Boston, Mass., measuring cloth on looms.

S. T. Thomas and Eliza Ann Everett, (adm.,) Lawrence, Mass., warping and dressing yarns.

Charles Mounin and W. N. Booth, Buffalo, N.Y., fastening lanterns.

Wm. S. McLean, Pittsburg, Pa., car-wheels.

W. M. Palmer, Palmyra, Me., threshing-machine.

B. S. & C. M. Pierce, New-Bedford, Mass., moulds for cement or earthen vessels.

A. H. Petsch, Charleston, S. C., dumping-car.

Sanford Stone, Kirkersville, Ohio, dumping-cart.

S. Shearman, Goshen, Ind., cleaning and feeding in grain to the mill-stones.

John Stull, Philadelphia, Pa., saw-mills.

Louis Schwingrouber, New-York, shoe-horns.

George Souther, South-Boston, Mass., tires for carriage-wheels.

Eli Whitney, Whitneyville, Conn., fire-arms.

Horace Woodman, Biddeford, Me., cleaning top-cards of carding-machines.

Simeon Willard, Cincinnati, Ohio, bedsteads.

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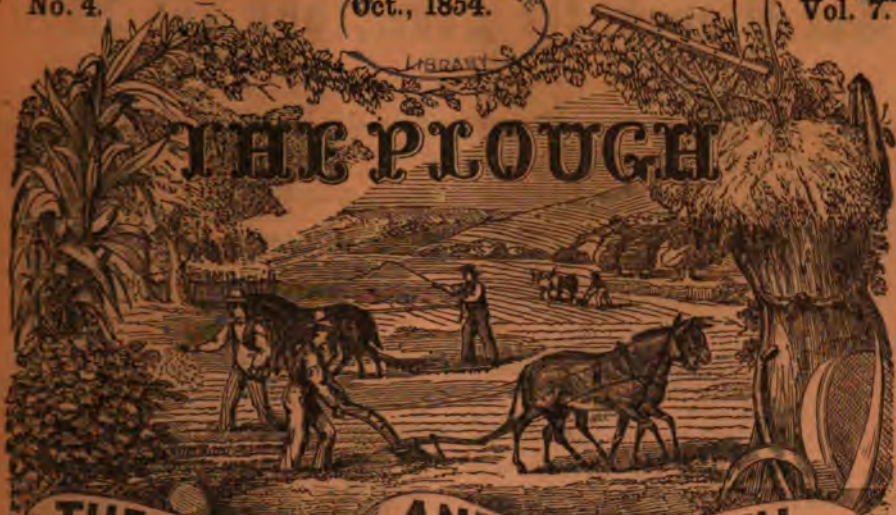
No. 4. Oct., 1854. Vol. 7.

THE PLOUGH



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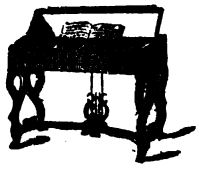

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1853, July 6.

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Vol. VII. OCTOBER, 1854. No. 4.

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BUILDING MATERIALS.

Among the richest and most valuable of the lands of this or any other country, those which contain iron and coal have been found to excel all others. Though their surfaces are a mere "barren rock," and the possibility of cultivation not a question even for consideration, they are worth more per acre than any other description of property.

But next, perhaps, to estate of this description, lands which contain building material may be classed, provided they are in the vicinity of a market, or if their products can be transported to market at reasonable cost. We propose to describe some of these products of our own country, and state their peculiar merits. The most valuable of all these rocks is

Marble.

Marble is the carbonate of lime, or lime-stone, though often mingled with foreign matter. But all carbonates of lime are not marble. The distinction is this: Lime-stone that will take a polish is marble. The coarsest lime-stones make a good building material, and may be even unsurpassed in an economical aspect, but they are suited only to those structures which can dispense with the finer kinds of ornament. Like granite, to be described hereafter, it is suited to every kind of structure in which the gigantic, the strong, or the durable is involved, rather than the elegant and the beautiful. All that is properly called lime-stone may be converted into quick-lime, under the heat of a moderate furnace, and will effervesce when acids are poured upon them. A single drop of any strong acid is a test that will never fail.

Lime-stones run into marls at one extreme, and at the other terminate in the purest marble. The "older" lime-stones contain some of the oxides of iron, the sulphuret of lead, or of zinc, manganese, etc. The "more recent," often contain fossils of various kinds.

Of marbles there are many varieties. One obvious distinction is into white, dark, and mottled. Of the mottled marble, different colors are produced by different mixtures of foreign substances with it, and the purest marbles are those which are perfectly white.

The various tints of marble are generally produced by the presence of certain oxides of iron. The blue and the green are the effect, sometimes, of the presence of hornblende. The black is produced by charcoal. Sometimes sulphur and bitumen are mixed with the marble, but their presence is readily detected by its odor.

The *verd antique* of the ancients is a kind of breccia or conglomerate, the paste of which consists of a mixture of talc and lime-stone, while the green fragments, held together by the paste, are *serpentine*. In the verd antique

found in England, the white is lime-stone, and the green, serpentine and asbestos.

Fragmentary marbles are divided into two kinds. When the fragments are angular, the specimen is called Breccia marble; when they are rounded, it is called Pudding-stone marble. Shells are often found in marble. Such specimens are called Shell-marble. The Lumachella marble is composed entirely of shells. Animal remains are sometimes seen in marble, which is then called Madriporic.

Marbles have been imported into this country in very great quantities, and have brought very high prices. The opinion used to prevail extensively, perhaps universally, that the *native* marble was almost worthless. It certainly sold in the markets for a mere fraction of the cost of the imported. Nor was this because no handsome marbles were quarried. The following anecdote was related to us, a few years ago, by a large owner of marble quarries. He had given his attention chiefly to the white variety, but determined to try a specimen of the variegated. A single slab was finished and sent to his Boston dealer, who placed it among his other native specimens. No purchaser was found for it. After a while he directed that this should be placed among his Italian slabs. A customer called and was shown into the foreign department. After surveying the assortment, he selected the Vermont slab, as an Italian marble.

Surface marble, which of course is the only marble to be furnished from most new quarries, is apt to be imperfect, abounding in seams, or natural divisions, and also may have been broken by violence. The earlier workmen used to blast with powder, and this was enough, perhaps, to ruin all the marble in intimate connection with the blast. The presence of iron is also injurious. By the action of the air it is made soluble, and the rains dissolve it. It is then seen on the surface, highly disfiguring its beauty.

We would here insert an extract from a recent paper on this important subject, by Mr. Stephen P. Leeds, a professed geologist, residing in Brooklyn:

"HAVING had occasion, during the past year, to visit many of the marble districts of New-York and of the New-England States, I would beg leave to call your attention to that portion of the mineral wealth of our country comprised in this valuable material for building and ornamental purposes; and I do so the more cheerfully at this particular time, for the marbles of this country are destined, at no distant day, to form a highly important feature in its vast resources; for among the many mining interests that are now manifesting themselves, that of marble can not fail to hold a high rank, not only on account of its real, practical utility, but because judicious investments in this branch of operative labor are certain to produce large returns for the capital employed.

A violent prejudice has long been held by dealers and workers in marble against the marbles of America, and that, too, without stopping to examine into the reasons upon which these prejudices existed, to see if they really were possessed of a moderately fair foundation. They have maintained that American marbles were not sufficiently solid—they were full of flaws and shakes—the texture was not uniform, being sometimes in the same block full of soft spots, intermixed with nodules of almost flint-like hardness—that the color was not equal throughout the same mass, and that the general quantity was not susceptible of a high lustrous polish, or possessed of that compact composition which would allow it to be worked well under the tools of the manufacturer—evils which it was asserted did not appertain to the imported

article. And they were right, but only so far as their observation extended. *All marbles of American quarrying have been, as yet, but surface specimens.* Throughout all the quarries that I have visited, I have not seen any where the excavation exceeded seventy-five to one hundred feet in depth; and it is from samples usually taken from the immediate surface that their examinations have been conducted and their inductions drawn; from samples where the action of atmospheric and other influences tending to decomposition, have for long ages been in full operation, acting to the deterioration of the stone, while the finer marbles that are imported from Europe are taken from quarries that have been worked for many years, and are taken from a great depth below the surface.

The extensive operations that are now taking place in the lime-stone districts of our country, are destined soon to show that these objections to American marbles are to be fully removed; instead of surface specimens, we shall have blocks from several hundred feet below the surface, compact, clear, and susceptible of the most exquisite and elaborate finish, and embracing every variety of style, from the plain block and unclouded white, to the delicately-veined and richly-shaded tint, so profuse of beauty, and so fully adapted to adorn the halls of luxury and elegance. Then the rare beauty of the marbles of Italy, Spain, and Portugal, hitherto unequalled, will meet in this country with a successful rival in the products of the great basin lying between the bold and rugged Adirondack Mountains on the west, and the high sweep of the Green Mountains of Vermont on the east, crossing that rich and fertile valley in which Lake Champlain reposes; extending north to the confines of Canada, and south, with some interruptions, through the western part of Massachusetts and Connecticut, and the eastern part of New-York, to the shores of Long-Island Sound.

Here, in this widely-extended tract, a new source of national wealth, heretofore inert and dormant, will ere long be called into active existence; for men of capital and enterprise, with that far-seeing faculty which characterizes the shrewd and successful operator, have investigated the whole of the lime-bearing district, and have secured, as the field of their future operations, the most choice and desirable points situated within its limits, thus adding not only to the prosperity of the country, but creating a new demand for labor.

The Vermont quarries are worked to the extent of between two and three millions of dollars per annum; the New-York quarries afford nearly two millions of dollars a year; and the Massachusetts and Connecticut quarries together yield nearly the latter amount, forming an aggregate of seven millions of dollars per annum for the four States, and this, too, under circumstances far from propitious for the full development of the marble sections to the utmost of their capacity; and such is the demand for marble for building and other purposes, that were the yield four times the above amount, it would not overstock the market, in fact the demand is almost unlimited.

Nor is the marble the only source of profit from these quarries, the chips of marble broken from the masses in quarrying and trimming the blocks, are used for burning into lime, and the quality of the lime thus formed is unsurpassed. To afford some idea of the quantity of chips thus used, "the lime made in this manner in Duchess county in this State amounts to over two millions of bushels per annum."—*Mather's Geology of New-York, p.* 411.

The value of a lime-stone deposit may be better shown in figures, and I would quote again from Prof. Mather: "Each cubic yard of rock will make four barrels of lime, including the necessary waste. This would give about 135,000 barrels to the acre. * * * * If we allow a profit of only 25

cents per barrel, an acre of this lime-stone, 21 feet thick, is capable of yielding a clear profit of $33,880."

As a building material, marble has ever been considered the first in durability and elegance; poets have sung its praises, and orators have descanted upon its charms; it has been used in the erection of national buildings, and worked into monuments to perpetuate the fame of heroes, statesmen, and men of eminence. Temples, consecrated to the holiest sensations of the human mind, and dedicated to the highest attributes of art; embodiments of the true proportions of the faultless, pictures of beauty and loveliness, wrought in solid and massive masonry—these have arisen from the marble quarries of ancient and modern times; and with the wide field before us still to be explored, promising, as it does, such rich and ample returns for investigation, we can not doubt that the time is near at hand when the marbles of this country shall claim and maintain their proud preëminence over those of all other portions of the world."

Marble occurs in almost all parts of this country, and many quarries have been opened. We have already seen to what extent some of them are wrought.

In Maine, a quarry has been wrought for many years, in connection with the Thomaston lime-stone.

In Western Massachusetts, they have been opened for many years. In West-Stockbridge most of the marble is white. Of this, in 1839, two hundred thousand dollars worth was sold. In North-Adams it occurs "of snowy whiteness," and free from magnesia. The Sheffield quarries produced the marble from which the pillars of Girard College were wrought. Great Barrington furnishes a very beautiful clouded marble, but it contains 40 per cent of magnesia. Lee produces handsome marble.

In Vermont, white marbles are found through almost the entire range of mountains from Bennington to Vergennes, and it is found also and quarried in various places through the entire northern section of the State. The finest grained marbles we have ever seen, we selected from a quarry in Middlebury. Mr. Crawford has pronounced these marbles equal to the finest Carrara. More recently we learn that some very fine grained marbles are found in West-Rutland. At Plymouth, Windsor county, is a very elegant fawn-colored marble, and also mottled varieties, which are perfectly beautiful. But they are very hard and brittle, and therefore wrought with difficulty, and hence they have been neglected for the white, which is more profitable. Rutland has for many years sent immense quantities of white marbles to market. A quarry in Danby produces a flexible white marble, of most excellent quality. A slab freshly quarried, of the ordinary size for grave-stones, when supported by its ends, will bend at its centre to the extent of an inch or two. It soon loses this feature on exposure to the air.

There is also a rock which has been quarried in Cavendish, near Proctorsville, Vt., and which is found also in Lowell and in Troy, Orleans county, and also in some parts of Orange county, Vt., which goes by the name of VERD ANTIQUE MARBLE. This is a misnomer. It is not properly marble, but is quite a different thing. It is serpentine, mingled, perhaps, with some lime-stone and with certain metallic oxides, which give it a veined or mottled appearance, unlike the true green of the pure or "precious" serpentine. Our own city fathers, we believe, are discussing its merits as a marble, and a specimen on exhibition is described by its owners as "destitute of some of the imperfections of ordinary marbles." It is a beautiful rock, well adapted for handsome fire-frames, tables, etc. It receives a high polish, and has an unctuous touch.

It is also a beautiful material for pillars and pilasters, and all inside ornaments. It is quite as competent to endure violence as most marbles. But we should as soon think of covering our houses with landscape paintings, as to use this material for the walls of a building.

Serpentine is a magnesian rock. Common serpentine, according to Comstock, is composed as follows: Magnesia 44, silex 44, alumina 2, oxide of iron 7.3. The presence of magnesia in any rock is not favorable to its durability, particularly where it is exposed to the changes of weather. No difficulty is found, however, in the use of such rocks inside of buildings. We know of fire-places built entirely of this "verd antique," which have stood many years, and are still as good as new.

Isle la Motte, in Lake Champlain, contains a very extensive quarry of black marble; very fine white marble also occurs. The lime-stones of this island abound in fossils, in which the ammonite, and a species of bivalve, are most common.

New-York is abundantly supplied with marble. In Westchester county, it is so abundant that it is used for walls. A few miles from Lake Champlain, in Chazy, is a quarry called "Stoughton's Quarry," the marble of which abounds in fossil encrinites and corals, and other sea-shells. It is a "grayish mosaic," mottled with the red of the coral. A specimen of this on exhibition at the Crystal Palace, obtained the silver medal. The Onondaga lime-stone forms an elegant marble, abounding in organic remains. A large part of the rock is frequently made up of fragments of crinoidea and corals.

In Pennsylvania is a marble of a reddish color, beautifully variegated. It is in Somerset county, near the Youghigheny River, and is on the line of the Collinsville Railroad. The vein is from 22 to 32 feet thick, and covers some 950 acres.

Indiana produces good marble, which is referred, geologically, to the Silurian period. It occurs above the blue lime-stone formation. The Marble-Hill quarry is one of these. Many feet below the place here indicated, is found a shell-marble bed, 20 feet in thickness, and of rare fineness.

Illinois.—The geological survey, under charge of Dr. Norwood, brought to light several sources of wealth and luxury not before known to exist; among others, several deposits of marble of different colors, and suited to different uses. Among these is a variegated variety, suitable for any description of in-door and ornamental work, as mantels, table-tops, etc. It is from Southern Illinois, and will compare favorably with most of the imported marbles used for such purposes. It resembles most nearly some varieties of Egyptian marble. Handsome black marble is also found in Southern Illinois. A light-colored marble, nearly white, is dug from the vicinity of Thebes. A single building in Chicago is of stone from this quarry. An oolitic marble is also found in Hardin county. Another quarry is found near St. Genevieve. Polk county produces a conglomerate marble, said to be very beautiful. It resembles the Potomac marble.

Wisconsin produces marble of great excellence. The prevailing color is light pink, traversed by veins of deep red; also blue and dove-colored, beautifully veined. Fragments of pure white marble have been found on the surface, but their place in beds has not been discovered. This occurs near the line of Michigan, and near the Minominee River.

The region around Lake Superior produces marbles in abundance. The "Lake Superior marble" is a pinkish-lilac, on dark and light strata, with dark and light-colored flakes, occasioned by fossil-shells. It also exhibits dark purple veins, forming delicate but distinct lines.

The quarries of Messrs. Burt & Ely, four miles from Marquette, contain a marble veined with all shades, but generally a rich rose-color, said to equal the best Egyptian.

On the Galena River, at Tuttle & McLeer's Mills, occurs a blue fossiliferous lime-stone.

The elegant Potomac marble is widely known as beautifully variegated.

Marble also occurs in the States of South-Carolina, Tennessee, and Texas. But we have no information of particular localities.

We do not, of course, profess to give a catalogue of all or even all the most valuable quarries, though we should be happy to receive and publish descriptions of such, wherever they occur. We wish to draw attention to the subject, and excite the owners of quarries to give them more publicity, and perhaps to induce others to open these mines of wealth, and at least ascertain whether the business of quarrying them might not be found profitable.

INTERESTING AGRICULTURAL STATISTICS.

THE Washington correspondent of the *Baltimore Sun* gives the following interesting statistics:

The Agricultural Bureau of the Patent Office, of which D. Jay Browne, Esq., is the chief, received this morning from the hands of the binder, a few copies of the "Letter of the Commissioner of Patents, communicating the agricultural portion of the report of that office for the year 1853." Published in a condensed and convenient form, here is brought to view the results of various experiments by many of our most scientific and practical tillers of the soil from every part of our wide-spread country.

These papers treat of domestic animals, fertilizers, improvement of land, bread crops, textile and forage crops, miscellaneous crops, fruits, wine, etc., and climatology. They embrace numerous important tables, exhibiting the quantities, valuations, etc.; beside which, the work is embellished with several beautiful and truthful plates of the strawberry, corn, etc., and other products. Time will only permit me to say now that this work, which has involved an immense amount of care and labor for several months, is thus produced in a manner which must command not only the approval but the admiration of a large portion of our countrymen.

This work says that, according to the census returns of 1840, there were in the United States 4,335,669 horses and mules; of 1850, there were 4,336,719 horses and 559,331 asses and mules, (in the aggregate, 4,896,050.) The present number, including those of cities, may be safely estimated at 5,000,000, which, at $60 each, would be worth $300,000,000. Then, on the subject of bread-crops, the census of 1840 gives the wheat-crop of the United States at 84,823,272 bushels; in 1850, at 100,485,944; showing an increase of 15,662,672 bushels. The entire crop of 1853 may be safely estimated at 110,000,000 bushels, and valued at $100,000,000.

Next the cotton. The census returns of 1840 state the amount of this article cultivated in the Union to have been 790,479,295 pounds; of 1850, 987,637,200 pounds, an increase of 197,157,925 pounds. The amount of the cotton-crop of 1853 is estimated at 1,000,000,000 pounds, which, at 7 cents, would be worth $70,000,000.

The article on hops says that the price of hops during forty-eight years has never gone below 5 cents per pound—the actual cost of growing. Of what other agricultural product can the same be said that is grown in New-England? Then, this very year, and at the time of writing this report, hops readily bring 45 cents per pound, giving the enormous profit of $450 per acre.

Of the apple, the writer is not only interesting, but furnishes many amusing reminiscences. Amongst others, he says "a codling-tree, sent from England about a century ago by Charles, Lord Baltimore to his son, Benedict Calvert, is now standing in full vigor at Mount-Airey, Prince George's county, Md." In 1820–'21, the number of barrels exported was 68,643, valued at $39,966. In 1852–'53, 45,075—value $107,283, and in vinegar $20,445. Every description of fruit is noticed in order, and with eminent ability.

Tobacco is also fully noticed. The census of 1840 gives the amount raised at 219,163,319 pounds. Of 1850, 199,752,655, showing a decrease of 19,410,664 pounds. The crop of 1853 may be set down at 199,000,000 pounds, which, at .10 cents per pound, would be worth $1,990,000. With these few extracts I must leave the work for the present.

STATISTICS OF SONOMA.

From the returns made for 1854, by the county assessor, we glean the following interesting statement of the amount of stock, grain, etc., in this county:

Sonoma Township.—302 oxen, 1565 cows, 883 calves, 436 horses, 165 colts, 1262 hogs, 3095 pigs, 2570 sheep, 1053 lambs, 43 beeves, 3100 acres wheat, 1381 do. barley, 73 do. oats, 190 do. corn, 5 do. rye, 62 do. potatoes, 355 tons grapes. Militia, 209.

Vallejo Township.—248 oxen, 415 cows, 355 calves, 144 horses, 16 colts, 750 hogs, 2000 pigs, 18 sheep and lambs, 213 beeves, 540 acres wheat, 156 do. barley, 31 do. oats, 13 do. corn, 112 do. potatoes. Militia, 77.

Petaluma Township.—455 oxen, 571 cows, 255 calves, 390 horses and 75 colts, 659 hogs and 1394 pigs, — sheep, 24 beeves, 879 acres wheat, 555 do. barley, 174 do. oats, 107 do. corn, 652 do. potatoes. Militia, 162.

Santa Rosa Township.—755 oxen, 1444 cows and 786 calves, 659 horses and 176 colts, 3415 hogs and 4514 pigs, 48 sheep and 20 lambs, 189 beeves, 2072 acres wheat, 547 do. barley, 114 do. oats, 86 do. corn, 43 do. potatoes. Militia, 157.

Russian River Township.—125 oxen, 528 cows and 222 calves, 202 horses and 108 colts, 1255 hogs and 1449 pigs, 30 sheep and 23 lambs, 4 beeves, 1120 acres wheat, 287 do. barley, 14 do. oats, 238 do. corn. Militia, 94.

Bodega Township.—511 cows and 460 calves, 81 oxen, 95 horses and 55 colts, 513 hogs and 745 pigs, 150 sheep and 110 lambs, 148 acres wheat, 130 do. barley, 160 do. oats, 7 do. corn, 735 do. potatoes. Militia, 55.

Annally Township.—1069 cows and 449 calves, 448 oxen, 442 horses and 54 colts, 2606 hogs and 1480 pigs, 200 sheep, 1182 acres wheat, 532 do. barley, 497 do oats, 136 do. corn, 10 do. rye, 1001 do. potatoes. Militia, 169.

RECAPITULATION.

Oxen,	2,412
Cows and calves,	9,804
Horses, mares, and colts,	3,017
Hogs and pigs,	25,137
Sheep,	922
Beeves,	493
Acres of wheat,	9,041
" barley,	3,558
" oats,	1,063
" corn,	777
" rye,	15
" potatoes,	2,605
Grapes, tons,	355
Militia, number of,	1,023

The following are the statistics for Mendocino township, (Mendocino county—yet unorganized, and attached to Sonoma county for judicial purposes:)

274 cows and 75 calves, 210 oxen, 241 horses and 67 colts, 2052 hogs and 1128 pigs, 146 sheep, 751 acres wheat, 46 do. barley, 87 do. oats, 381 do. corn, 40 do. potatoes. Militia, 80.—*Sonoma Bulletin.*

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

FOREST-TREES: SPECIMENS OF NATURAL HISTORY.

MESSRS. EDITORS: In an article from the *Ohio Cultivator*, on raising forest-trees from seed, the writer states that a deep, sandy soil is requisite for the successful growth of the chestnut, and it is vain to attempt to make it thrive on soils of an opposite character, as we know from repeated experiments.

Thus writes the Ohio correspondent. Chestnut thrives here, in Nichols, N. Y., and vicinity, on a soil of rather a loamy and clay and very stony, a large amount being on very high hills, where the soil is a kind of loam, with hard-spar, frequently with two feet and some places one foot; frequently on high hills the timber is over three feet in diameter; also the rock on the high hills is often found within six feet of the top of the ground. The rock in this vicinity is the Ithaca and Chemung group, and underlies the southern tier of counties of New-York, and a large part of Pennsylvania, with a considerable portion of Ohio and of other States. The chestnut thrives well here on the low river-flats, where the soil is alluvial. In relation to the butternut and walnut, they do well in this region, on a low, gravelly, sandy soil, and frequently on stony and clay loam, generally found here along the banks of rivers and creeks. There is but little lime in the soil here. From two specimens that were analyzed from Chemung county, by Prof. Emmons, the soil yielded from one and a half to one and three fourths per cent of lime. In the diluvial portion of this vicinity are often found a number of lime-pebbles and bolders from the northern lime formations.

The sugar-maple is found here growing on the highest and lowest land in this vicinity, and frequently on the high hills of large size with hemlock. The different species of hickory and white-oak, chestnut-oak, or rock-oak, black-oak, and red-oak, all grow here on hill and valley, in great abundance, and of a large size.

In relation to planting seeds of forest-trees, I have no doubt but that it can be done often with much advantage. In this vicinity, and most probably in many others, a large amount of young trees of various kinds can be got for transplanting.

In relation to the article in the July number of *The Plough, the Loom, and the Anvil*, I agree with the writer, that every person should make more or less collections in natural history. It is singular to notice how little this science is understood by the mass of the people. This ought not so to be. People should understand, or try to understand, the works of nature that are constantly before them. I have within a few years, while engaged in my farming and lumbering operations, made quite a large collection of minerals and fossils, and am now-a-days making a collection of fish and reptiles for the Smithsonian Institute, and also another collection of fish for Professor Agassiz's great work on the fish of the Union. It can all be done without a great amount of trouble.

ROBERT HOWELL.

Nichols, Tioga County, N. Y.

KEEP YOUR CATTLE WELL FED.

THE feed in our pastures is worth now, comparatively, but very little. Hence those animals that rely on this source for their food must suffer inconvenience.

It is important not to compel our stock to use up the rich deposits of fat or flesh, etc., during this season of short supply. The effect of such a course will last through the winter.

It is well known that if a sheep is half starved for only a few days, the growth of wool during that time will be of diminished value. The fibre will be of inferior quality. So that there is loss both of quantity and quality. We have no doubt that similar results follow the negligent treatment of cattle. When a man is sick, and thus prevented from eating, how rapidly sometimes does he waste away. It is very certain that other species of animals are alike affected by only a temporary want of food. Wild animals we know accumulate, during the warm months, that which supports them in their confined quarters during the frosts of winter. Let us not fail to profit by these hints. Winter is a severe season, in our northern climate, both for man and beast.

Fat-producing food is more important in winter than in summer, for the reason already suggested. Hence the oil-cakes, so much used in England, and there considered indispensable, or some convenient substitute, should be fed to our cattle during the cold season. Potatoes are a substitute, but the crop is too small to admit of such use. Different sections of the country have their own crops, which are adapted to the use of cattle. Cotton-seed, even after the oil has been expressed, in a good degree, is a fair substitute for the oil-cake.

CURIOSITIES OF THE BRITISH CENSUS.

We find in the *New-York Times* an abstract of the British census, which is well worth the notice of our readers. The following paragraphs contain its substantial parts:

When the first regular census of Great Britain was taken, in 1801, the resident population of England and Wales was not quite nine millions; at the last reckoning, in 1851, it was almost eighteen millions—that is, the numbers had doubled in half a century.

In Scotland, half a century since, the resident population was 1,608,000; in 1851, it was 2,883,000. In Ireland, on the contrary, the population is less now than it was in 1821, in 1831, and in 1841; in that last year it was 8,175,124; in 1851, it was only 6,553,178, and has much decreased since then by emigration and eviction.

The population may thus be generalized, as taken in March, 1851:

England and Wales,	17,927,609
Scotland,	2,888,743
Islands in British Seas,	143,126
Ireland,	6,553,178
Total,	27,712,656

The British census return for 1851 shows some curious data as to the occupations of the people of Great Britain. There are 524 authors, 1320 editors, 207 reporters and short-hand writers, 8433 booksellers, (also described as publishers,) 11,029 bookbinders, and 26,024 printers. There is no distinctive mention of compositors. There are only 10,255 merchants. Of shoe-blacks there are only 5. Commercial travellers, 9409, being less than in 1841. Of actors and actresses, 2041, and 82 equestrians; advocates, barristers, special pleaders, conveyancers, 3111; but of attorneys there are 13,256. On the other hand there are 17,621 clergymen of the Established Church, 1556 Baptist ministers, 1972 Independent, 2725 Presbyterian, 14 Unitarian, (this evidently is too small a number,) 1798 Wesleyan, 1580 of other Protestant denominations, 1093 Roman Catholic, and 73 Jewish priests, and 973 Scripture readers, missionaries, and itinerant preachers.

Against the law and divinity, there are 2328 physicians, 15,163 surgeons and apothecaries; 15,643 druggists and chemists, 146 drug-merchants and brokers, and 88 leech-bleeders, breeders, and dealers. There are, among artists, 5444 painters and 666 sculptors. Of the juveniles, 55,020 were under tuition at home, and 2,697,717 at school. There were 65,376 schoolmasters and mistresses, which includes ushers; 176 drawing-masters and teachers. There were 13,865 pastry-cooks and confectioners. As many as 20,242 are returned as "dependent on relatives." There were 46,661 publicans and beer-venders, 40,241 soldiers, 4516 officers, 1735 half-pay officers, 89,206 merchant-seamen, and 6763 in the Royal Navy, with 23,907 Chelsea and 7976 Greenwich pensioners.

It is impossible, they are scattered under so many heads, to arrive at the numerical strength of the manufacturing interest. The agricultural is plainly put thus: Farmers, 303,720; graziers, 3,047; son, daughter, grandson, grand-daughter, brother, sister, nephew, niece of farmers or graziers, 275,170;

farmers' and graziers' wives, 201,736; indoor farm-servants, 364,194; farm-bailiffs, 12,805; out-door agricultural laborers, 1,077,627. The total of persons directly engaged in agriculture, with the addition of 34,627 landed proprietors, would be 2,272,826, or about a ninth of the whole population of Great Britain. The Parliamentary orations of the Protectionists have strongly declared that it was a much greater proportion; but the figures of arithmetic play the mischief with figures of rhetoric.

The increase of population in London since 1801 has been curiously rapid. In that year it was 958,863: the return for 1851 shows it as 2,362,236. From 110, (half a century ago,) Birkenhead (the Brooklyn of Liverpool) has sprung up to 24,000; Liverpool itself from 82,295 to 375,955; and Manchester from 94,876 to 401,321. Even Bristol, which has only recently awakened from a heavy commercial lethargy, has double the population she possessed half a century ago. The greatest increase in any place has been at Glasgow—from 77,000 in 1801 to 329,000 in 1851.

Two other points remain to be mentioned as curious: First, the continued excess of females over males, as shown by each of the five census-takers of the last half-century—while, on the other hand, there are born more male than female children. Secondly, the remarkable fact that while in England, Wales, Scotland, and the Islands in the British seas, the population of towns was 10,556,288, the population of villages and detached dwellings of the country was 10,403,189. The difference in numbers is so small that the return may be taken as giving what is called "six of one, and half a dozen of the other."

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

THE MISSISSIPPI PLANTER.

MESSRS. EDITORS: I shall in this letter endeavor to give you a sketch, though an imperfect one, of the Mississippi Planter, and may allude to another profession.

The notion is held and even encouraged by many between this and the Canada line, that our planter, nabob-like, either spends his time braced up in his arm-chair, in utter listlessness, having his wants attended to by a nod from the hands of some obsequious slave, or in visiting his neighbor to chat over the gossip of the day. Or, if possibly he may have some under-range of thought, he is trying to figure in politics. As for agricultural interests, they are too burdensome for his imbecile nature. All these matters are left to an overseer; and so long as he can make the cotton-bales count at the expiration of the year, it is immaterial how much suffering man and beast have endured.

Fancy now a character the reverse of this, and you will then much nearer approximate toward the truth. One who greets with pleasure the sharp north-wester, with its bracing influence, that is to give him additional energy for his business; who, forsaking his pillow at an early hour, witnesses the "ruby tint of morn," that heralds the approach of the god of day whose warming rays in spring and early summer he delights to bask in; for then he knows that the same cause that will bathe his brow in sweat, will give increased vigor to his growing crop. It is immaterial whether he has an

overseer or not. He feels that his planting affairs have a claim on him, and in responding to them by his personal attention, he is acting within the sphere of one of his greatest pleasures. To carry out his plans he has to hold daily counsel with himself or manager, in determining the time for certain kinds of work, and the best way of doing it. Neither is he regardless of his stock, for well does he know that on his oxen, but especially his mules and horses, depend much of his future success. Not only does he assist in planning, but is cognizant of those plans being carried out, by witnessing their application.

The agriculturist of this region that does not exercise his powers of mind and body, and does not bring his plans into a well-digested form, will find himself behind the majority of his neighbors. He needs to have an estimate of his work at least a month ahead. And, to be safe so that all ends shall be well dove-tailed together, when the cultivation of his crop comes on, he has to make a calculation of the time, in the commencement of the season, it will require to do his indispensable work—such as preparing his land for the plough, ploughing, fencing, etc. This should be done by the 1st of April, allowing 20 per cent for time that the plough should not be run on account of the wetness of the ground, and 10 per cent for bad weather. The balance then can be directed to clearing land, ditching, and other improvements. When seed-time arrives, his time and mind are occupied by the inquiry, How he shall plant to the best advantage, to insure a good stand and not crowd one portion in the way of another, that when it may be ready for tillage he may be prepared to give it? Should he neglect either of the above, in all probability, and especially if he has fifteen or twenty acres to the hand, he will find himself, to his sorrow, in a condition by the middle of June, that may tell woefully when harvest-time comes. Does he expect when the seed is in the ground that his holiday has commenced? Far from it. From the great amount of tillage, in connection with the rapid growth of weeds and grass, he has little time for idleness, especially if May proves wet. The cotton-plant in its infancy is one of the most delicate, showing hardly any progress before the 1st of June, while the grass is striding onward, like Jacky's bean, to overwhelm it. If we had only our cotton to protect and foster at this time, we might feel ourselves more our own masters; but our corn equally, if not more so, demands our help. One false step, or little neglect, may make us, let us do what we may hereafter, corn-buyers, which is never a feather in the planter's cap. We recognize in it, if the season has not been too wet, an evidence either of bad management or slothfulness, if we are found much in the grass. We have an innate pride, independent of the pecuniary advantage, in having a good crop, and of course are pleased if we secure something better than our neighbors; and this satisfaction is further enhanced if we can demonstrate that it has been accomplished with less work than theirs, for this would furnish very strong proof of superior husbandry. Then, beside our *interests* involved, there is a spirit of rivalry set up, of mind against mind, and physical force against physical force. Can such a state of things exist without the development of mental and physical energy? It is impossible. No two consecutive years will admit of the same kind of management. As the seasons are variable, so have we to vary the application of our work. Many think that the agriculturist's life is like that of a horse in a bark-mill, round and round, with very "little variation or shadow of turning." What a mistake! Every step must be guided by thought. Should he establish a system, and say, By this I will be guided, what in all probability would be the consequence? In a few years he would

find himself behind the value of his capital. As the physician and political economist have to be governed by circumstances, so has the planter. I think one of the principal causes of the jarring among political economists, is that they establish systems independent of transpiring events. Whatever would be the true policy of a prosperous nation at one time, the opposite would be requisite at another.

Few of us have had an opportunity of acquiring that kind of knowledge from books that constitutes the scientific agriculturist. But from having the book of nature constantly before us, and reflecting that light we call experience, we are thus enabled, although ignorant of the causation of things, to apply our efforts to that way that will secure profitable crops in return for our labor. We all plead guilty to that pernicious system, established in all new countries, of exhausting our soils, and, when shorn of their riches, of submitting other portions to the same process. The force of habit is frequently more dominant than nature, and the power of the multitude in constraining our judgment is equally strong. Can it then be expected that we can immediately divest ourselves of these baneful influences? I think not. Experience yearly tells us we should change this policy. And this we are doing, though slowly; but to counteract this course, we have a great abundance of fertile and cheap land, that is still a stranger to the dominion of the plough. Yours, etc., H. W. STACKHOUSE.

Hinds Co., Miss., August, 1854.

DRYING FRUIT.

It has been observed that the amount of peaches consumed in a single week in the city of New-York, exceeds the total consumption of fruit in Great Britain throughout the entire year. The sales of perishable fruits are rapidly increasing throughout the country; but there is one serious drawback to their extensive cultivation; that is, the necessity of crowding them into market at the critical period of their maturity, so that twenty-four hours' delay shall not witness their destruction by decay and fermentation, and result in their total loss. Hence the immense superiority, in this particular, of long-keeping sorts, which may be deliberately secured and held in market for many months, till the best time shall be selected for their disposal.

But there is another important avenue to market for the perishable fruits that is at present almost unknown in its perfected form. We allude to *preservation by drying*. Every farmer *thinks* he has seen dried apples and peaches, *but not one in a thousand has seen them*—properly so called. That which usually appears under this name, consists, in the first place, of a selection of such inferior, poor-flavored fruit, as can be used for nothing else; this is imperfectly pared, leaving a due proportion of skin and core remaining, and is then variously subjected to partial decay, smoking, drying, etc., forming when completed a singular medley of all colors from brown to nearly black, and with nearly as various an intermixture of flavors. Those who wish to see dried fruit in perfection, must remember that a poor-flavored sort before drying, can never by any ingenious process become finely flavored afterward. The very finest varieties must therefore be first chosen. The process of drying must then be so rapid that no decay nor even discoloration shall take place until the operation is completed. Our climate is too precarious to

think of drying fruit properly in the open air, even for the earliest varieties. Some artificial arrangement for the purpose must therefore be devised.

The great leading defect of all the plans we have seen for drying by fire-heat, is *a want of circulation in the heated air*—a deficiency in rapid ventilation. A high temperature is given by means of stoves to a close apartment, the air of which in a few minutes is heavily charged with moisture from the fresh fruit, and a sort of steaming, stewing, half-baking process then commences, producing, after a long delay, an article far different from that of a perfectly dried, finely-flavored fruit. A free circulation of air, kept dry by a continued fresh supply, would accomplish the work in far less time, and at a much lower temperature; and consequently retain, in an incomparably more perfect manner, the original characteristics and color of the fruit.

In order to make a beginning in this matter, and to assist in the erection of good, cheap, rapidly-operating, and perfect fruit-drying establishments, we present to our readers a description of an apparatus for this purpose, which, although never patented, we believe to be far more valuable than many machines not thus thrown open to the public. Its peculiar advantages will be obvious as soon as the description is examined.

It consists of a tall upright shaft, through which passes an endless chain, made of a number of strong frames, securely hinged together at their corners. This chain should be strong enough to bear several hundred pounds without breaking. At every joint it is furnished with a braced shelf, each consisting simply of a square frame furnished with coarse twine-netting, like a sieve. This endless chain, with its series of sieves, runs over an angular wheel above and another below, precisely like those of a common chain-pump, but wide enough to receive the full breadth of the chain. Its motion is quite slow, descending on one side, and rising on the other, and is accurately regulated by means of a pendulum connected to the notched wheel by means of an escapement like that of a common clock, but made very strong. A strong and broad India-rubber band connects the axle of this wheel to the drum on which the chain runs. As the chain is loaded with the drying fruit, and is therefore quite heavy, it must not, and indeed can not be subjected to the successive vibrations of the clock-work—these vibrations being broken and destroyed by the India-rubber band.

The whole apparatus being ready for operation, heated air from a stove and drums is made to pass up through the shaft, being let in at the sides, and confined to this shaft by the drum being made light, and fitting closely without touching in its revolutions. A person with the freshly-cut and pared fruit, as each successive shift or sieve slowly descends, spreads a single layer over them. They operate like the weight of a clock in keeping up the motion of the pendulum; and the velocity of their descent is accurately regulated by means of the relative sizes of the wheels placed on the axles, and also, if necessary, by using different lengths for the pendulum-rod.

The great advantage of this contrivance is the following: The dry and freshly-heated air first enters the bottom of the shaft, and strikes the fruit when the drying process is nearly finished, and completes it; as this air rises, it receives additional portions of moisture from each successive shelf, until finally it passes off at the top, the driest portions being needed at the bottom to complete the process, and those most charged with vapor only coming in contact with the freshest fruit at the top, where only it could be useful.

The velocity must be so regulated, by experiment, (according to the height of the shaft, heat of the air, and time required for drying,) that the drying process shall be just completed by the time the fruit reaches the bottom,

where it drops off from the revolving shelves into baskets or boxes placed there for this purpose.

This apparatus may be placed in a tall narrow building erected for the purpose, and built cheaply by vertical boarding on a wooden frame, to the whole of which a handsome architectural exterior may be imparted by giving it the aspect of a square Italian tower or campanile.

An apparatus of this sort will dry fruit with great rapidity, certainly, and independently of the most unfavorable changes in the weather; and it will come out white, clean, and perfectly dried, retaining all the peculiar flavor of the fresh fruit, and prove incomparably superior to the common half-decayed, smoked, imperfect article. When known, such dried fruit must command almost any price in market. Drying establishments, well managed, would give a great impetus to peach-planting in this country; and we unhesitatingly predict a large trade in the finest dried peaches in European markets, to which they can be so cheaply and safely conveyed, and where, as fresh peaches can not be easily obtained, they can not fail to be very highly appreciated.—*Country Gentleman.*

[We should be glad to give the representation of this piece of machinery, and may be able to do so hereafter.—EDS. P., L., AND A.]

SOCIAL POSITION OF THE FARMER OR MECHANIC.

LARGE quantities of paper have been wasted by more than one class of the community, in trying to convince the public that they were very badly used. We could refer to repeated efforts made by those who, in reality, had nothing to complain of, to show that the respect which was in fact paid them, was less than they had a right to demand. We can even point out a large body of clergymen, who, a few years since, were foolish enough to assume such an attitude. School-teachers have done it repeatedly, and one of our own humble efforts, years ago, in a discourse before an association of teachers, was party directed to this subject. We endeavored to show the folly of such conduct. Parents look to teachers as necessary helps. They rely on them exclusively for giving to their children a certain position in society, which, without education, they can not retain. Hence they must regard them with especial favor. But it is not strange that they should be cautious and watchful of the *individual* to whom they intrust such important matters. Hence, while they honor teachers as a class, they are (or ought to be) strict in the examination of the candidate for the office of teacher, and until he has earned for himself a reputation for unsullied integrity in his professional duties, he ought to be watched narrowly.

We can not believe it possible that the people, in mass, can entertain a prejudice against any useful calling. Whence could such a feeling arise? What state of things can be imagined in which such feelings, if once excited by some casual occurrence, should grow into a settled habit?

Executioners, we know, are everywhere despised, and perhaps abhorred—but even this does not bring into disrepute the office of sheriff and marshal, although upon these officers are sometimes imposed the duty of hanging a man.

We have before taken occasion to show that the position of every class is determined by the average cultivation of the class, or by the degree of culture, mental and moral, ordinarily exhibited by it, or required for success in it.

Farmers and mechanics are not exceptions to this rule. They have had, and must have had, in the main, their proper place, as certainly as water attains its proper level. Nor is it true that other professions or pursuits of similar culture, stand higher than they do. We can refer to a case in illustration. We are acquainted with a town where, twenty years ago, the finest houses were occupied by merchants, lawyers, and educated men of leisure, who were always looked up to as at the top of the social ladder. They employed mechanics of various sorts, who, by prudent management, obtained a prosperous business, and acquired considerable estates. The lawyers and merchants died or otherwise disappeared, and by-and-by it came to pass that these same mechanics, artisans, etc., purchased an doccupiedthose same fine houses. What was the result? Those who knew them at an earlier period, and accurately measured their real worth, allowed them just the same degree of respect when they came to occupy a finer house. But with their increase of property, they were able and were disposed to give a good education to their children, far better than they themselves had, and while they continue to maintain the same reputation, the society of their children is valued and cultivated as were the children of the former occupants of those houses. We are confident that this is not a solitary instance. Many of our readers can, no doubt, point out just such a community, and more than one may imagine that he knows the original of this very description.

Let our readers of various callings practise according to these suggestions, and thus test their propriety. We know that individuals, from some accidental occurrence, or some physical imperfection, or otherwise, may be subject to unjust prejudice, among a small circle of associates, and sometimes injustice on a wider scale is witnessed. But these cases are exceptions, and can not occur in relation to masses.

A host of facts bear us out in these opinions. Who is more honored than the mechanical inventors of the last generation? Whose fame is greater or wider than that of Arkwright, Fulton, Watt, etc.? Who is more widely known and more highly honored than Mr. Bigelow, the inventor of the Power-Loom, and of other useful machinery? Who receives more notice abroad than he is now receiving? On the other hand, who are more insig-insignificant than a swarm of the pettifogging lawyers which abound in every large city? Some of these are perhaps unjustly doomed, for they are often looked upon as little better than the criminals which people our jails.

Inert matter illustrates this subject. What is there more coveted than a splendid farm? Even the hired men of such an establishment are gazed upon as among those who are especially favored. But who covets a wild, uncultivated, barren swamp or sand-bank? An elegant carriage—asplendid steam-engine—or even a beautiful toy, will arrest the attention of a crowd. But who cares to look at a piece of bungling workmanship? And yet even this attracts notice, if it exhibits some new principle, or new application.

It is so with men. We may require their aid, but unless they show a degree of mental culture which deserves respect, and draws forth sympathy, they can not afford pleasure or give dignity to a society of educated men.

HORTICULTURAL.

THE PAULOWNIA IMPERIALIS.—The Imperial Paulownia is one of the plants lately brought to Europe from Japan, by Dr. Von Sieboldt, the Belgian botanical traveller. In its native country its local name is *Kirri;* and the Chinese call it *Too-Hak-Too.* It forms a tree, in Japan, about thirty or forty feet high, with a trunk two or three feet in diameter. The bark is smooth and light-colored. The branches are rather few in number, spreading horizontally and forming a large head.

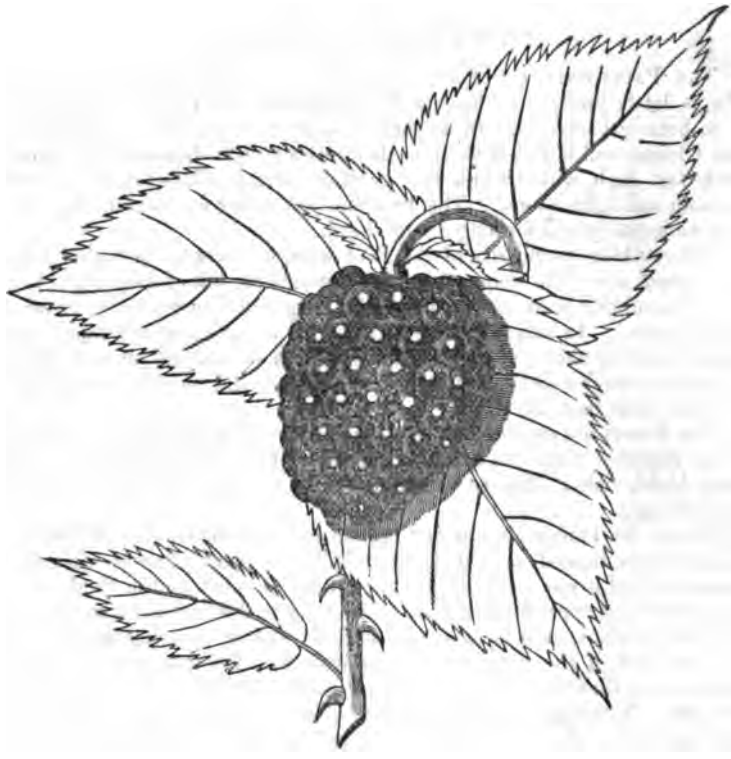
The striking peculiarity of the Paulownia, however, is its showy foliage. The leaves are of the shape of those of the Catalpa, but of darker green, perhaps resembling more closely those of a large sun-flower—being broad and heart-shaped. In rich soil the growth of the tree is extremely rapid, young plants making shoots of eight or ten feet in a season, and on such we have measured leaves a foot and a half in diameter. But on older trees they are usually about half that size.

The flowers are produced in April in panicles, at the ends of the branches. They resemble in general appearance those of the Catalpa, but the color is a pale, bluish-violet. The seeds are borne in an oval capsule as large as a pigeon's egg.

When the Paulownia was first introduced into the Garden of Plants at Paris, it was treated as a delicate green-house plant. It was soon found, however, that it was perfectly hardy on the Continent and in England. In this country it appears equally so. The trees in this latitude have stood the past two winters, even in exposed situations, without covering, and have not lost an inch of the previous season's growth. We therefore consider it a hardier tree than the Catalpa, which often suffers badly from the cold of this latitude. Nothing is easier than the propagation of this tree. Single buds will grow, like those of the mulberry and the vine, taken off early in the spring and covered about an inch deep in the soil of a fresh hot-bed. The cuttings of the young shoots, planted under a hand-glass in a shady border, strike root readily. But by far the easiest and most rapid mode is that of planting pieces of the roots.

Every little piece of the root of the Paulownia will, under certain conditions, produce a plant. It is only necessary to make a common hot-bed early in the spring, reduce the roots of the parent-tree, (and it will bear a very severe reduction,) and plant every piece that will make a cutting not smaller than a goose-quill, and a couple of inches long. Plant these bits of roots about an inch and a half deep in the rich, light soil of the hot-bed. In a fortnight's time every bit will throw up a bud, make new roots, and become a *distinct* plant. When the plants are about three inches high, they may be transplanted into rows, beds, borders, or, in short, wherever they are finally to grow. If the season is favorable, they will grow to the height of from three to six feet before the close of the autumn. Next year, if the soil is deep, they will make shoots eight or ten feet long.—*Downing.*

RAILROAD CONSOLIDATION.—The Cincinnati and Chicago, and the Cincinnati, Logansport, and Chicago Railroad Companies, have consolidated under the name of Cincinnati and Chicago Railroad Company, and C. P. Smith has been elected President.



LAWTON BLACKBERRY.

The reputation of this new luxury of the fruit-garden being now fully established, we present to our readers a representation of the fruit and leaf of medium size, taken from nature; it is the "standing or upright variety," and the first decided improvement ever discovered, and is no doubt an original seedling. The fruit, in size and shape, strongly resembles the Hovey seedling strawberry, and when fully ripe is perfectly delicious. We extract from the September number of the *Horticulturist* the following testimony in its favor, from Charles Downing, Esq., and no better need be furnished:

"Having heard a good deal about the Lawton or New-Rochelle blackberry for the past year or two, and knowing that many new fruits were overpraised, I made a special visit to Mr. Lawton's a few days since to see for myself, and can assure you I was well paid for my trouble. There is no humbug about it; and the only wonder is that it has not been more generally introduced and propagated before. The fruit is large and sweet. It is an enormous bearer; indeed, the quantity (considering the large size of the fruit) surprised me, and the berries were perfect. Mr. Lawton informed me they continue in bearing five or six weeks, and in favorable seasons much longer. He has some two or three acres, and will have plants to dispose of in the fall and spring; the latter, however, is the most preferable time for transplanting. Plant as early as the ground is in good working order."

Mr. Lawton's farm, (Wm. Lawton, Esq.,) is in the village of New-Rochelle,

and his garden and residence are within five minutes' walk of the depot. Visitors are at all times permitted access to his grounds, to inspect his plants. He is cultivating the fruit extensively for market, where it readily commands thirty-seven and a half cents a quart; and, in extending his plantation, all his plants are carefully examined at the fruiting season, to guard against the accidental introduction of any of the common varieties, or the deterioration whichis sure to take place under careless cultivation. Plants sent to purchasers will be those only raised upon his own grounds, fine, vigorous offshoots from bearing plants.

We find, by the directory, that Mr. Lawton has an office at No. 54 Wall street.

CHEAP CANDLES.

We find in an exchange the following recipe for making candles: To twelve pounds of lard use of alum and salt-petre each one pound; dissolve the alum and saltpetre in a small quantity of water, then pour into the melted lard, and boil the whole until the water evaporates. The mixture requires constant stirring to prevent settling in the bottom of the vessel. Candles made of this composition are equal to the best tallow, and last some time longer.

COFFEE AT MOCHA.

The coffee-plant grows sixteen or eighteen feet high, with an upright stem covered with a light-brown bark. Its branches grow horizontally and opposite, crossing each other, and form a pyramidical appearance. The leaves grow on the opposite side of the branches, to the length of four or five inches, and to half that width in the middle. The flowers growing in bunches at the junction of the leaves are white, maturing first into green, then red berries resembling bunches of cherries, each of which contains two kernels. But one crop is annually produced, which is gathered in the months of January and February. For the purpose of being dried in the sun, the gathered coffee is spread on the house-tops, or cleared spaces of ground, where it is frequently watered to open the koke, or shell, which is always separated by grinding before packing. The coffee raised at Annas and Sana, which is held in the best estimation, is generally dried upon temporary floors, covered with a *compost of clay and cow ordure, which protects the coffee from vermin, and also gives it a permanent yellowish color.* How perceptibly such a compost may affect the taste of the coffee, would doubtless be a matter of inquiry with the tidy, cow-loving Hindu housewife, who uses a solution of it to purify her parlors, ornament her walls and doorways, and for numerous other purposes.

Large quantities of coffee arrive at Mocha, from March to the latter part of July, from the coffee districts within twenty days' journey. Camels are employed in its transportation, each of which carries about six hundred pounds, contained in two sacks. They are driven in long trains of fifty or more, arranged one behind another, the head of each being tied to the tail of the

camel immediately before him. Thus arranged, but few drivers are necessary.

All coffee from the country is first taken to the custom-house, a large building one hundred and fifty feet square, near the sea-gate, where it is stored to be inspected by the Governor, who visits the custom-house daily. Here also the duties are fixed, at the rate of seven per cent on English and three per cent on American imports. A double duty is imposed on smuggled goods. From the custom-house the coffee is taken to the gow-downs, or warehouses of the merchants, several of which are attached to the walls of the custom-house and rented by the Government. There it undergoes the process of being cleared from pebbles and dirt by means of sieves. Those who do this tedious work of garbling, though expert in their calling, earn but the value of five or six cents daily, a portion of which earnings is paid to one of their number who acts as their overseer, and to whom the purchaser must complain, if he has any fault to find. An active man may garble two or three bales a day, and a smart woman half as much. Having been cleaned, the coffee is packed in bags for exportation, and, if good, should be free from white and black kernels and have an aromatic smell.

But few Arabs, and those the wealthier class, indulge, as a general habit, in the luxury of coffee. It has often been disputed whether coffee does not come under the prohibition of the Koran, which forbids the use of strong and inebriating liquor, as it is a well-known fact that the fumes of coffee have some effect on the imagination. Its use is, however, generally tolerated, and many Arabs say "a dish of coffee and a pipe of tobacco are a complete entertainment." They drink it without either milk or sugar, after it has been pounded fine in a mortar and then steeped. All classes use a very palatable beverage made from the koke, or coffee-shell, which goes by the name of *kawha*. It can be obtained at the numerous and much-frequented coffee-shops, where

"Well-seasoned bowls the gossips' spirits raise,"

for half a cent a quart.—*Notes on Majung and Zanzibar.*

RAISING CORN FOR FODDER.

Different methods of cultivation have their several advocates. Every crop is treated by different methods by different farmers, and perhaps with equal success. Corn for fodder is sometimes sown in drills, and sometimes broadcast. We doubt whether either way has very decided advantages, though the former gives better opportunity for weeding. But the following method, which is new to us, commends itself as specially worthy of attention. The reference at the commencement of the extract refers to a late number of the *Cultivator:*

Messrs. Editors: I read your article on "Sowing Corn for Fodder," in the July *Cultivator*, with considerable interest, but I have a mode of raising it differing slightly from yours. It is this: Sow in drills one and a half feet apart, at the rate of about four bushels to the acre, and when just up sow on the rows plenty of plaster, (say three or four bushels to the acre.) When six or eight inches high, run through it with a small corn-plough or cultiva-

tor, made very narrow. Commence cutting to feed green, every alternate row, when about two or three feet high, and get over the field by the time the corn is four feet high, if possible; then turn and cut out rows two feet wide crosswise.

The advantage of this method is that, if the soil is rich, we will have left on the ground all that can stand up, and will have all that is cut up clear gain, which is several tons. I think an acre will produce nearly twice as much in this way as to have the rows three feet apart in the first place.

I wish some of your correspondents would weigh the product of an acre, and communicate the result to the public through the *Cultivator*. I believe it would astonish all who have not tried the experiment. I sowed mine this year on the 17th of May, and, from some experiments in cutting and weighing, I believe I have places in my field that would, if weighed now, (July 10th,) green, amount to near 60 tons to the acre. W.

Oswego, July 10, 1854.

SOUTHERN PROGRESS.

We are happy to learn that the farmers and planters of the border counties of Virginia and North-Carolina have associated themselves for the promotion of their common interests, and have established "The Union Agricultural Society of Virginia and North-Carolina." On the 4th of August last, an address was delivered at Petersburg by the President of the Society, James C. Bruce, Esq., of Halifax county, Va. Among many judicious things contained in extracts of his address, which we have met with, were the following, in which he gives the same views which we have given on that subject:

"The respectability of every profession is graduated by the amount of intellect which is made to bear on it. Agriculture is the calling of the masses, and to elevate it we must elevate the masses. General education, and a wide-spread popular enlightenment, is as much the basis of a prosperous agriculture as it is of a rational liberty; and, to improve the cultivation of our States the light of knowledge must first fall on the minds of their citizens. The principles of a scientific agriculture, or even of a wise practical tillage, can not be instilled into the minds of the ignorant. It may be safely said, then, that the reason why the agriculturist is a laggard in the race of improvement is, that his competitors have always had the advantage of more intellectual culture. There is abundant cause for this. The cultivators of the soil are scattered over a large surface; their employments are independent and solitary; they want the attrition of social intercourse, by which the mind is polished and sharpened and the intellect lighted up. The votaries of other trades and professions live in cities, are brought into daily contact, and have their colleges, their guilds, their trades-unions and associations. Union not only gives light and knowledge, but energy, confidence, and boldness."

We give also another paragraph, in which, as elsewhere, he shows himself fully competent to address a society of farmers:

"I am happy to see, from the published proceedings of our Society, that it is contemplated to hold a Fair in October next, for the exhibition of spe-

cimens of the production of our fields, our herds, and our flocks. Let it be remembered that our Society will derive neither honor nor shame from this exhibition, for it is too young to have incurred any responsibility. We can not in a moment call, by our fiat, order out of chaos or light out of darkness. All that we promise is, to show the condition of our agriculture at the commencement of our labors; to see what we have and what we have not. In order that this may be done, let every member bring up a specimen of his land. Let him present his firstlings; his sacrifice will be accepted. Let no one come up here in October empty-handed. Let him who pleads his poverty show a specimen of his poverty. If we show nothing else, let us show our wants. This is what our Society ought to know, it is what our Society ought to relieve, and for this purpose it was called into being. It is not a vain show that we desire to make; we want to see what we are now, that we may hereafter make comparisons, in order to know if our Society is doing good, and whether the country is prospering under its auspices. This is the object of the Society in holding its fair, and all must acknowledge that it is a good object and a useful one. While, gentlemen, our exhibition should be on a liberal scale, we should exercise at the same time a judicious economy of our means. We have, in my judgment, other objects, less striking, perhaps, but fully as important, which appeal to our liberality. I wish to see our Society take a wider range than any other which has preceded us. I want to see our experimental farm in operation; and I dream, too, of an agricultural school attached to it under the direction and management of our Society. Why not? There are schools of divinity, of law, and of medicine, and why should not a body of agriculturists like us have our school of agriculture? What is our organization worth if it does not bring forth some splendid effort of enterprise? An experimental farm, with an agricultural school attached to it, would leave us nothing more to ask for or to wish. We are now engaged in the task of laying the corner-stone of agriculture. Let its foundation be broad and deep. Let not our work be ephemeral, and let us not content ourselves with the exhibition of an amusing pageant. Let us not be servile copyists, but let us lead, let us boldly lay down a course for our Society that is useful, that will benefit ourselves, that will benefit our States, that will benefit the world."

PROPOSED PREMIUMS—MARYLAND SOCIETY.

The Trustees of the Maryland Agricultural Society for the Eastern Shore, very liberally offer premiums for sundry experiments, as follows:

"Whereas, it is of primary importance to the producers of wheat and corn to ascertain definitively, if possible, the relative products of wheat when propagated in the various modes now in use; and also the relative effect of a ridged and level surface, as left by the wheat-crop upon the succeeding crops of grass and corn; and whereas, to accomplish this object fully and satisfactorily, it is deemed expedient to offer such premiums as will probably induce many to incur the trouble and cost of the necessary experiments; it is therefore

Resolved, That this Society will unite with the Maryland State Agricultural Society, and such County Societies as may be in existence in this State,

in offering a premium of $150, to be awarded in the autumn of 1855, for the best conducted experiments that shall exhibit the comparative results of propagating wheat—by drilling on a level surface—by drilling on a ridged surface, lengthwise the ridges—by sowing broadcast upon a level surface—and by sowing broadcast in ridges or narrow lands.

Resolved, That this Society will unite with the aforesaid societies in offering a premium of $150, to be awarded in December, 1857, for such continuation of observations as will most conclusively prove the effects of the said modes of culture for wheat (that is, the effect of a flat and ridged surface) upon the crops of grass and corn which may follow.

Resolved, That this Society will contribute the sum of $26, provided the aforesaid societies will contribute the balance required for the above-named premiums. The said experiments to embrace not less than five acres of each mode of culture.

Note 1. In the grass-crop the apparent difference, if any, is all that need be noted and reported. It will be required that the relative cost of the different modes of culture shall be reported with at least proximate accuracy; also the description of soil, quantity of seed-wheat per acre, date of drilling and sowing, distance between the drill-lines, and observations of the appearance or condition of the crops at various stages of their growth.

It is suggested that the width of the narrow lands or ridges to be drilled, shall equal the width of the drill, which is generally, probably uniformly, five feet; because on such ridges the drilling can be executed with accuracy; whereas if the ridges shall be narrower, or wider than the drill, the team will have to be altered in its position on the ridges at each through, and therefore can not be driven accurately; and drills will also be made at frequent intervals in the bottoms or middles of the furrows. Ridges of five feet can also be reaped with accuracy and facility by reaping-machines, because the latter are generally of the same width. If the land is in sod, ridges of five feet in width can be more deeply and thoroughly ploughed into ridges again, for corn, than those of the ordinary width of four feet, and the width proposed is probably as well suited in all respects for the production of corn as any other width of what are termed *narrow lands*.

It is also suggested that where surface-drains or water-furrows are necessary in land to be drilled, such furrows should be made previously to the drilling, and should be again cleared subsequently to the drilling."

This offer is issued by Mr. M. Tilghman Goldsborough, the efficient President of the Society. Mr. G. resides at Ellenborough, near Easton.

A MODEL BARN.

A CORRESPONDENT of the *Farm Journal*, one of the best of our exchanges, gives the following account of a model barn, on the farm of George Wilson, Esq., near Bellville, Mifflin county, Pa.:

It is a hundred and seventeen feet long by sixty-five wide; there is stabling under the whole, except a wagon-shed at the one end, the whole width of which is twenty-two feet, and is as long as the barn is wide—made to drive through; an arched cellar of thirty feet in length, and eight or ten wide, takes up a part of the wagon-shed. Above the stabling are the hay-mows; then

seven or eight feet above is the main floor, running the whole length of the barn, the entrance being at the end; under this is another floor, forty by eighteen feet, running across the barn—used for cleaning grain; under the main floor are the granaries; corn-cribs are over the wagon-shed on either side of the upper floor; a threshing-machine is arranged, with horse-power, in the main floor, at one side, so as not to be at all in the way, and the horses work n the wagon-shed beneath, an upright post passing through the floor, and connecting with the main wheel. Horses and driver are always in the dry—protected from a hot sun in warm weather, and from the chilling blasts of the cold, inclement season. The straw and other things for the manure-yard pass out in front over a scaffold level with the upper floor, which is at least twenty feet high, making it very easy to put out a large amount of straw. The hay all descends seven or eight feet below the upper floor before it reaches the bottom of the mow, so that it is no trouble to unload it; but, without a more minute description, I must say that this is the most convenient barn that I have ever seen. It is not the "double-decker" barn, of which there are many in some parts, but this one was planned by the owner, projected bv him alone, his carpenters working by his directions. The whole cost was about $3000. It is on a fine farm of near two hundred acres of tillable land.

THE VALUE OF ROOT-CROPS.

It is reported as a remark of Mr. Webster, that if the turnip-crop of England were to fail for two years in succession, that country would be ruined. This, of course, is a figurative speech, but there is much truth in it. A chemical analysis of turnips, however, would lead us to draw inferences the reverse of this. A root or fruit of which water forms 90 to 95 parts in every 100, can scarcely be thought very nutritive; and if the doctrine so very current, and which we have urged, that food containing nitrogen can alone be made useful to produce muscle, is true, then turnips can not rank very high among such kinds of food. But we are beginning to inquire, at least, whether we and others are not in error here. Whether the great quantities of nitrogen in the atmosphere were not made for some other reason than because the Great Architect of all made oxygen rather too strong for common purposes. While so much oxygen is consumed by all forms of life, what service does the nitrogen perform? "It feeds plants." True, and *may it not* also feed animals? If not, why not? We do not attach so much force to the logic used on this subject as we have done, and facts and experiments certainly compel us to no such result. Potatoes yield but very little nitrogen, about 1¼ parts in 100. Whence, then, comes the constant supply of muscle for the poor Irishmen in their native hovels? A very large proportion of the food of thousands of them, and almost the whole of many, consists of the potato only. Do they grow thin and weak? Neither. The carbon of the potato forbids the former, but what furnishes the muscle and imparts strength? Either we eat a wonderful excess of this muscle-forming food, or there is some mistake in our logic on these matters. But look, again, at the Esquimaux. Whence come the muscles of that race of oil-feeders? Who labors harder than the ox, who feeds, often exclusively, on grass? The horses of hundreds of farmers, and especially those of twenty or thirty years ago, were kept without any allowance of grains. Whence comes the daily supply of nitro-

gen in the milk of the cow? She is fed, in many districts, with the same kind of feed.

Do you reply that all these substances contain nitrogen? We admit it. But we also claim that more nitrogen is voided in the excrements of these animals than is furnished in these kinds of feed. By Liebig's analysis, 100 parts of dry hay give 1.5 nitrogen, while by Bousingault, dried cow-dung gives 2.3 nitrogen. But this is aside from our main object. We recur to the subject of roots.

Turnips are found to be of great benefit to cattle, and why? We are inclined to explain it on the principle that concentrated nutriment is not so wholesome as that which is more diluted. The more diluted our food, provided we do not overtask the energies of the intestinal canal, in the conveyance of it to its destination, the better for the health of the animal. May not this be the rule? In such cases, the absorbents have more time and a better opportunity to possess themselves of what they need, without suffering any thing to escape them. We do not assert this. We only suggest where no one appears ready to establish any thing. The fact is universally admitted, that concentrated nutriment does not, of itself, form healthy food as an exclusive diet.

Again, the *ingredients* of turnips, etc., may be very favorably proportioned and combined to produce a physical effect peculiarly favorable upon the membranes with which they come in contact, and thus tend to secure a healthy condition in them. Is there any more satisfactory explanation of *the how* so vapid an article as a turnip is proved to be, should be so efficient?

But all roots usually cultivated, and all fruits resembling them, are peculiarly desirable as feed for cattle. Beets, carrots, pumpkins, etc., have proved of great value for such purposes. Indeed, we can hardly doubt that the green stalks of corn, when fed to animals, pay better than the grain. Scores have given the results of their experiments, and among them all there is a marked agreement. The exceptions are few, if any. And it is obvious that in the green stalk the elements are in a condition more resembling roots, than is the grain, which is a more concentrated form of feed.

The following, according to Boussingault, are the constituent elements of sundry crops:

	Carbon.	Oxygen.	Hydrogen.	Nitrogen.	Inorganic matter.
Dry Turnip,	429	423	55	17	76
Dry Beet,	428	434	58	17	63
Clover,	474	378	80	21	77
Oats, (the grain,)	503	372	63	22	40
Wheat, "	461	434	58	23	24
Rye, "	463	442	54	17	24
Potato, dry,	440	447	58	15	40

In these results there is a very great uniformity. But there is another matter to be taken into account. In the composition of 1000 parts of

Wheat, (the grain,)	117 are water.
Barley,	150 "
Oats,	100 "
Rye,	100 "
Maize,	130 "
Rice,	140 "
Turnips,	800 "
Red Mangel-Wurzel,	901 "
White Sugar-Beet,	869 "
Parsnip,	793 "

In the proportion of water there is a marked difference between roots and grains. How important this may be, what differences result from the combination of water in the root and water taken from the brook, we are unable to state. But is it not natural to suppose that the solid parts of the root, being to a greater or less degree in a state of solution or semi-solution, the food is in a better condition to be acted upon by the fluids of the stomach, and with more facility converted into chyle? And does not this tend to show the propriety of soaking grains, so far as it may be done conveniently, before feeding them?

Of the fact that soaking grains, and especially corn, for horses before feeding them, improves them, our own experience convinced us years ago. Whoever adopts this course will find fewer grains among the excrements of the stable, unchanged, than when the corn is fed in a dry state.

As to the comparative value of crops of grains and of roots, we offer the following as a tolerably fair approximation. Precision is, of course, impossible, where the conditions are so variable. The value of land, of labor, of manure, and of crops, is too various for the predication of any thing very definite. Various reports in the Hampden County (Mass.) Agricultural Society, bring the following as the cost of certain crops per bushel:

Wheat,	58 5-6 cents.
Corn,	54 2-10 "
Rye,	48 "
Carrots,	13 2-10 "
Turnips,	4 2-3 "

Making an estimate from various other reports of the Massachusetts Societies, (though at a lower rate than the premium crops,) and from other sources in our possession, we come to the following results, the quantity of land taken being one acre:

Carrots.—Produce, 600 to 700 bushels of 50 lbs. each, worth ½ a cent a pound, or $150 to $175. Cost of cultivation, say $75. Profits, say $75 to $100 per acre.

Sugar-Beets.—Produce, 320 bushels of 50 lbs. each, at 18 cents a bushel, its value is $57.60. Cost of crop, say $35. Profits, $22.60.

Ruta-Bagas.—Produce, 800 bushels of 50 lbs. each, at 25 cents a bushel, is $200. Cost, $100. Profit, say $100.

Turnips, (common.)—Produce, 600 bushels, at 12½ cents a bushel, is $75. Cost of crop, $40. Profits, $35.

Wheat.—Assuming 30 bushels as a fair crop, at $1.25 per bushel, the produce will be $37.50. Cost, $20; profit, $17.50. Or, by Hampden county estimate, the profit will be, say $17.65.

Corn.—Produce, 75 bushels, at $1, is $75. Cost of crop, $30. Profit, $45.

Reducing these results to a tabular form, we find the profits of an acre of

Carrots, say	$75 00
Sugar-Beets,	22 60
Ruta-Bagas,	100 00
Turnips,	30 00
Wheat,	17 50
Corn,	45 00

We do not pretend to accuracy. The cost of crops varies fifty per cent in different sections of country. Labor has no fixed price. The value of land,

and the interest on land, is as unsettled as any thing can be; and the value of crops of all kinds depends upon the state of the markets, and the facility for transporting the crop to the market. Still we have made out a rough model, which every one disposed to do so can correct, as the almanacs say, for his own latitude. We doubt not that he will find one thing true, to wit: that root-crops are among the most valuable of all the products of the farm.

It does not follow, we would add, ere we close, that roots are not excellent feed, even though they are of less profit as a crop for market. It is worth while to produce many things for our own use, which would not pay if carried off from the farm.

MINES AND MINERALS AND MANUFACTURING IN EAST-TENNESSEE.

We take the following from the *Knoxville Register* of the 12th, from which it will be readily perceived that the present course of the Legislature of the State of Tennessee, in granting aid to railroads, will tend to the early development of these latent resources, and make that State one of the wealthiest and most prosperous of the Union.

Much has been said of the copper-mines of Polk county, and from what we hear as daily occurring in that region, we are constrained to believe that their value has not been as yet half developed. But recently, we are told, the miners have reached the yellow sulphuret of copper, which we understand is an infallible indication of the inexhaustible extent of the mines, and also their incomparable richness. The fever which has hitherto prevailed in that quarter of East-Tennessee, seems not yet to have attained its highest pitch, as new discoveries are being made, new mines opened, and large transactions transpiring. But last week, we are informed, there were sales of two or three quarter sections of land, at about $1,250,000.

About five thousand tons of ore are now being taken from the mines monthly, and this of such richness as to be worth net one hundred dollars per ton, thus making the products of the mines even now half a million of dollars per month. What it will be when the shafts that are being sunk all penetrate the rich sulphuret, no one can conjecture, and what discoveries are yet to be made in the intervening spaces between the Polk county mines and those recently discovered in Carroll county, Virginia, "no man can know." That the two developments are but the out-cropping of the same continuous vein, which extends along our eastern border, we think there can not be the shadow of a doubt, as the Virginia and Polk county veins have the same direction, north-east and south-west, have the same dip, the same surface-indications, and are in the same chain of mountains. Beside this, the formation of the intervening country indicates as certainly the presence of copper beneath the surface, as do the masses of once molten matter which are to be seen where the copper has been found.

But these copper developments are not the one tenth part of the indications of the unprecedented value which is some day, and that now not very far distant, to be attached to mineral lands in East-Tennessee. To say nothing of our zinc, lead, marble, etc., etc., and the immense amount of capital which we have no doubt will be some day employed in bringing these

treasures out of the earth, we can point to our *mountains of iron and coal* as being of more value, ultimately, than all the copper-mines of the world, no matter how productive they may be.

It is strange, indeed, that all the capital which is now being invested in the mineral lands in East-Tennessee, should be controlled by this copper mania. There are immense fields of coal, unsurpassed in their extent, or in the quality of the coal, by any that has ever been discovered, in immediate proximity to the best iron-ore in the world, and that, too, so abundant, that we verily believe, with the fuel so near, and other facilities which may be had, together with the modern improvements in the art of making iron, the pig-iron may be made at a cost of little more than five dollars per ton. And yet thousands of acres of land in East-Tennessee, where this coal and iron so much abound, might now be purchased for less than fifty cents per acre; and that, too, in view of the fact that there are so soon to be radiating from Knoxville railways to the North, South, East, and West, over which the iron may be transported with profit to any market in the United States.

To Charleston, for instance, the time will soon be when it may be transported for eight dollars per ton, thence to New-York for two and a half dollars; to Cincinnati and Louisville for from four to five dollars, making the actual cost of the iron in New-York less than $20 per ton, in Charleston less than $15, and in Cincinnati less than $10! To our distant readers, who are familiar with the prices for pig-iron, ranging from $20 to $50, these suggestions may seem to be visionary, but they will not so think when we tell them that iron is now made in East-Tennessee after the fashion in which "our fathers" made it, and that, too, with charcoal, at $10 per ton, and that the iron men of East-Tennessee have always realized good profits in the Ohio River markets, though their only access to them heretofore has been by a transportation of near three thousand miles, (*via* the Tennessee and Ohio Rivers.) Here, then, is the place to "put money"—in the coal and iron lands; not that there are not large profits to be realized from a more complete development of our marble quarries, zinc and lead-mines; but iron has ever been, and must continue to be, an article absolutely indispensable, in some form or other, to every family in this and every other land.

COMBINED STEAM.

Reference has frequently been made to improvements in the machinery of the steamship "Arctic;" but no particular statement of the nature of the improvements has been made, that we are aware of. The New-York *Courier des Etats-Unis* supplies the desired information in the following paragraphs, which we translate from that paper:

The important modifications which are being made in the "Arctic's" machinery are designed to accelerate speed without increasing the expense of fuel, but rather diminishing it. The value of the improvement is about to be put to the proof, the alterations in the machinery being nearly completed. The improvement consists in the application of a new process of applying steam, known as the "Patent Wethered Process." The principle is very simple. It is, properly speaking, an augmentation of the propelling power of the steam, by combining it with another current of steam which has pre-

viously traversed the highly-heated atmosphere of the boilers, and thus raising it to a higher temperature.

To arrive at this result the steam, as it escapes from the boiler, is concentrated in the conducting-pipe, whence it is taken by two other pipes, which, dividing it into two portions, lead it off in different directions—one directly into the steam-chest, and the other, by an interior chimney, through the boilers, and in its turn into the steam-chest, after becoming super-heated. When the two portions reünite, the combined steam is at a very high temperature—some 400 degrees higher than usual. The movement is given to the engine in the ordinary way, but with a vastly-increased force.

A series of experiments, made under the direction of Mr. Collins, is said to have established the economy of this process, in respect to fuel, the saving in which is said to be about 70 per cent. By burning 666 pounds of coal an hour, the simple steam gives 19 and 3-10ths double strokes of the piston per minute; whereas the combined steam gives 20 and 1-10th, with 440 pounds of coal only.

IMPROVEMENT IN ROLLING RAILROAD BARS.

Mr. William Harris, late of the Rolling-Mill firm of Harris, Burnish & Company, of Pottsville, Pa., has just completed an invention for the manufacture of railroad iron, which, in the opinion of our ablest mechanics, is likely to give a fresh impetus to the iron manufacture, and to effect corresponding changes through the entire trade. It consists in a new method of arranging the rolls, and can not fail, wherever understood, to entirely supplant the old process.

By the old (present) plan, each pair of rolls has nine separate grooves, through which the heated mass from the furnace is successively passed, until it is delivered from the last in the shape of a railroad bar. Much manual labor is required; and even with the most skillful and expeditious workmen, the metal has time to cool very considerably before it is finished, thereby becoming less malleable, and causing a dangerous strain upon the machinery. The breaking of a roll in such a mill, it is well known, is but a common occurrence.

Now, instead of the one set of rolls, containing the nine grooves, by the *new* process there are nine separate pairs of rolls, each having but one groove, arranged in one continuous line, with close ducts or boxes between; so that the "pile" (the hot ball of metal) is fed in at one end, and comes out at the other a railroad bar! The principal advantages claimed, are, economy of time and saving of manual labor—highly important considerations, as all iron manufacturers well know.

Let us compare, (and our data throughout, it may be proper to remark, are not mere guesses, but have been ascertained by accurate calculations:) By the old process, a bar of 21 feet, the usual length, is manufactured in 2½ minutes; by the new, in the same time, one of a hundred feet could be run out, if the "pile" could be prepared; or, with the speed proposed for the new machinery, a bar 30 feet long may be finished from the "pile" in 30 seconds!

By the old plan, ten men and boys are ordinarily employed in the rolling process alone; by the new, but one, and his business would be solely that

of superintendence—there would be no manual labor for him. For instance, the heater brings his "pile," it is put in at one end of the continuous line of rolls, and requires no further manipulation till it is delivered, a railroad bar, at the other.

Another prime advantage claimed for the new process, is the manufacture of the "red-short" iron into railroad bars. This species of iron, it is well known to manufacturers, possesses a peculiar brittleness when hot, that renders it difficult, if not impossible, to work by the old process, though remarkably tough when cold, having a long fibre and making the best of railroad iron. On the new plan, the time occupied in the manufacture of a bar is so short, that the metal can easily be retained at a workable temperature during the entire process. This will undoubtedly tend greatly to improve the general character of railroad iron; as the "cold-short," now mostly employed for that purpose, (because it is most easily worked,) becomes exceedingly brittle when cold, being in very many cases not much better in that respect than common pig-metal.

The new machinery used is of the simplest mechanical construction, and not at all likely to break or get out of order. It consists mainly of a horizontal shaft, to which are attached, by plain bevel-gearing, the several rolls, some revolving vertically and others laterally, (in order to compress the metal on all sides.) The rolls are set apart at distances corresponding with the successively increased lengths of the "pile," in its passage through them—the first four or five being comparatively close together. Hence the entire length of the line of rolls, for manufacturing bars, say 21 to 30 feet long, would not exceed 100 feet. No more power is required than in the old process, as the metal is acted upon but by one roll at a time; and not near so much toward the finishing, as in the old process the metal has by that time cooled very much, and of course is less malleable; while by the new, the whole operation is performed so speedily that the temperature of the metal is very little reduced.

As to the cost of a mill constructed with the new rolling machinery, a liberal estimate places it at about 15 to 20 per cent more than the present expenditure; but the new rolling apparatus *alone* will not cost more than 10 per cent over the price of the present rolls. The other increased expense results from the additional number or improved capacity of the furnaces necessary to supply the new rolling machinery, and of course is to be considered in connection with the proportional increase of manufacture. This will become plain by a simple calculation: A mill constructed on the old plan can work up about 70 tons of metal in 24 hours; that is, in the largest establishments, with the best machinery and the most experienced workmen. But, with the new rolling gear, 120 tons can be manufactured in 12 hours; or, nearly four times as much—the yield in both cases being limited by the rolling power. The principal difference, therefore, so far as cost is concerned, after the new rolling apparatus is introduced, is in the additional number of furnaces required to keep it going.

There are other incidental advantages connected with this invention, that we have not attempted to enumerate; we may have occasion to allude to it hereafter. The model has been examined by a great many persons, and the actual process of manufacture performed with small bars of cold lead. The general opinion expressed is admiration and implicit confidence in its success.—*Pottsville Miners' Journal.*

ON MANURES—THEIR USE.

POUDRETTE, GUANO, COPOSTS, GYPSUM, LIME, MARL, ASHES.

MANURING is the first, second, and third requisite for good farming. We have often treated on these topics, but again present a short and practical view.

POUDRETTE, well prepared, in our opinion, is the best of prepared manures, although some reasons exist why it is not so extensively used as it might be. Its odor sometimes is unpleasant, and where this objection does not exist the absence of odor is the result of improper treatment, by which its ammonia is dissipated. It is, however, so prepared as to free it from both objections.

Poudrette should be sown in a dry state, like ashes or plaster, and covered by the plough or harrow. It should never be left exposed on the surface. It is useful on all soils, and for all crops. For grass-lands, no application is better. For turnips it is unsurpassed, perhaps unequalled. For strawberries it is remarkably successful. For corn it should be scattered in the hill, *not* in a heap, a small gill in each, being about eight or ten bushels per acre. On potatoes twice that amount, or more, may be used profitably. For peas, beans, etc., sow the poudrette in the drill or hill. For grape-vines, fruit and ornamental trees, scatter freely among the roots after and before using the spade, etc. Grain-crops require that it should be spread broadcast, quite freely, and covered lightly with the seed. If masses of poudrette are left in contact with plants, it destroys them by excess of heat, like Peruvian guano. For melons, cucumbers, etc., mix freely and thoroughly with the soil in the hill, before planting. For asparagus it may be applied in a similar way, either in the fall or spring.

The presence or absence of ammonia may be attested by mixing a small quantity of it with unslacked lime, well pulverized, in a tight bottle, and keeping it close for half an hour. On removing the cork, the smell of ammonia should be quite powerful.

GUANO stands among the very best fertilizers. But what guano? It has been considered that the Peruvian guano was far superior to any other. But we are not ready to assent to this doctrine, without qualification. If nitrogen is the element wanted, then guano can have no competitor. But is this so? We think not. We believe that the phosphates are of far more value in most cases than ammonia. And why? Ammonia acts on the instant, and its virtue is not so permanent. It secures the present growth of the crop, but is not efficient in making a good permanent soil. Beside, an excess of Peruvian guano will destroy the crop. Like alcohol on the human system, a small quantity may give present energy, but too much burns up the crop it is designed to help.

We give the first place to the phosphates. As we have lately remarked, it is from the want of these that so many wheat-fields have become barren, and the supply of the phosphates to those fields has prepared them for greatly increased crops without the addition of any thing else. Our readers are familiar with the remarkable results which attended the use of the phosphates on certain lands of Judge Buel. Some of the South-American and Mexican guanos are richer than the Peruvian, in these elements, and hence we should prefer them at the same price. But they are also cheaper, per ton, although we have just learned that the price of the Peruvian is here-

after to be diminished some twenty per cent, a circular being issued to this effect.

It is also true that wheat-lands, as well as others, are deficient in ammonia. But our belief is, that if the *soil is* otherwise *properly prepared*, the plant will find nitrogen *somewhere*, perhaps in the air, perhaps *elsewhere;* or, in other words, furnish every thing else, and by this very process, *in fact*, (but not of necessity, in theory, of course,) every thing will be found that the plant requires. We have never heard of a soil deficient in nothing but nitrogen.

Guano is an excellent application for worn-out wheat-lands, for clover, and, on many soils, for grasses. It is also useful when applied in connection with seed, at the time of sowing, the seed being steeped in it. It is also advantageously applied to grape-vines, and to fruit-trees. The ground should be forked about their roots, away from the body of the tree, the guano spread on the ground, and then liberally watered.

At the South, on cotton-lands, Peruvian guano is found to be very productive. Near Charleston, S. C., it has been used on what was originally "fine and productive cotton-lands, abounding in decomposed granite, and resting upon a good clay sub-soil." It had been exhausted by injudicious croppings, like most of the soils in the older States. The application of guano and of plaster succeeded admirably, both with cotton and corn crops. Those portions where the guano and plaster were applied, produced some five times the amount of seed-cotton that was produced on the same lands where nothing was applied. On the corn-lands there was little difference between the portions manured by guano and by cotton-seed. The guano was applied to the cotton at the rate of 80 lbs. to the acre, mixed with 100 lbs. of plaster, and sown in the drill. On rich alluvial land, producing forty or fifty bushels of corn per acre, guano was found of material benefit. The African guano did not prove to be efficient.

Peruvian guano, when used in vegetable gardens, should be thoroughly mixed with the soil before sowing the seed, or better still, should be thoroughly mixed in compost before it is used. Any loamy soil answers well for the compost, and the soil should be three or four times the bulk of the guano.

Phosphates, Composts.—Next to guano, for general application, we should specify various prepared manures, of domestic production—prepared bones, mineral phosphates, like that found at Crown-Point, N. Y., and in one or two other localities in this country. Preparations, honestly made, of the "*phosphates*," "*super-phosphates*," and "*improved super-phosphates*," may be even superior to many of the guanos. But there is here so great a temptation to swindle, as in the milk-trade, that no purchaser is quite safe without an inspection of every bag. We would have State inspectors in every city, who should place his seal on every package, and would make it penal to sell without. The manufacturer can afford this expense. He can make large quantities so much cheaper than the farmer can prepare his little, that the addition of this tax would leave him a good profit, and yet furnish an article well worth its cost to the consumer. In this class of manures should also be ranked those from fish, and animal offal of all kinds.

There are no lands, in our belief, where these preparations would not be serviceable. They, especially those first named, are excellent when applied to a crop of wheat, and all other products of the same general character. Grass-lands are much improved by them, and corn when the soil is partially exhausted.

For potatoes, "English farmers use a compost of 30 lbs. of wood-ashes, 15 of burnt bones, 10 of plaster, 20 of salt, 30 of air-slacked lime, and 7 of saltpetre." A compost of a portion only of these would be highly serviceable, and prepared bones, and ashes, or either alone, on many soils, would greatly increase the crop.

Lime, in a variety of forms, is beneficially applied. Various marls, in which the carbonate of lime predominates, are extensively employed in many sections of the country. Pure lime acts on the soil both physically and chemically, or, in other words, it is useful in making clay soils lighter, light soils more consistent, and in absorbing moisture and gases. It also counteracts the acids in the soil, and in that way prevents the growth of certain weeds, while it positively improves the condition of the soil. It also acts by causing the insoluble silicates, etc., to become soluble. Lime is also a stimulant, promoting an increased action in all the elements of the soil, producing a more rapid growth. As a general rule, perhaps eight or ten bushels of quick-lime should be allowed to an acre, and on some soils, if of the mild forms, carbonate, marls, etc., an indefinite amount up to ten times that quantity. Different soils should be treated according to their condition.

Ashes are chiefly useful on account of the alkali they contain, and their action is similar to that of lime. Leached ashes, having lost much of the alkali, must be used in much larger quantities to produce the same effect. This is suited to root-crops, grass-lands, wheat-land, rye, potatoes, clover, and almost all crops. Quick-lime should not be used in connection with animal manures, as it sets free their ammonia. Mild lime, marls, etc., may be used in connection with such manures with good effect.

Lime in all its forms, whether as gypsum, as pure lime, in marls, or ashes, has a permanent effect upon the condition of the soil. Whenever, in ploughing, the sub-soil is turned up freely, there should be a liberal application of lime in some form. Perhaps ashes, used very freely, will be found most economical.

For some soils, gypsum, or sulphate of lime, proves an admirable amendment, but it is not quite certain, before trial, whether it will be good for a given soil.

Gypsum probably acts in different ways. It absorbs moisture, and valuable gases, perhaps "attracts" ammonia from the air, and it yields also its sulphur and its lime. Such, at least, is most probably the fact, although we have no means of proving, to a demonstration, what its operation is. Its action, according to Johnston, is much increased, when used for a crop of clover, or peas, etc., if mixed with common salt. Probably a double decomposition is thus effected, of which the growing crop derives the benefit.

As to the comparative economy of the various fertilizers, we doubt whether any general rule can be given. Their action, and of course their value, depends on circumstances.

We have mentioned salt among our fertilizers. We doubt its especial value on the sea-board, but believe it useful in sections remote from the influences felt near the sea.

Guano is in very general use, especially at the South. Eighty tons were recently sent from Norfolk to the interior in a single day. The demand from the interior of North-Carolina is very large.

PRESERVATION OF FRUITS, AS APPLES, PEARS, TOMATOES, ETC.—EXPOSURE OF POTATOES TO THE SUN.

Air and warmth are essential to the decomposition of matter. Could a convenient process be devised for the complete removal of one or both these essentials, housewives might hold a jubilee. Different processes for accomplishing this, to a greater or less extent successful, have been devised. Among these are the following:

The use of an ice-house is sometimes resorted to, and while the intense cold of the interior would but hasten their destruction by freezing them, a compromise is made, and a kind of vestibule or ante-chamber is constructed, which has a uniform cold temperature, but yet above freezing. This answers a very good purpose. We have known pears, peaches, and plums preserved in that way a long time. But every one has not these facilities, and the success of those who have them is but partial. Small quantities only can be thus provided for.

Tomatoes we have eaten the year round, as good as when fresh, by the following process:

Let the tomatoes be ripe and fresh; remove the skins; pack the tomatoes into tin boxes of about a quart capacity; season them as if for immediate use, (avoid cayenne); solder on the covers of the boxes, leaving a pin-hole in each cover; boil the *boxes* half an hour; any number of boxes may be boiled at once. Immediately upon taking the boxes from the boiling water, stop the pin-holes with solder or sealing-wax. If at any time before the boxes are cold, you detect the slightest sound which indicates the escape of air from an aperture in the box, the hole must be found and closed. If sealing-wax is used for closing the pin-holes, care should be taken lest it be broken off in moving the boxes.

A new fact in domestic economy has been communicated to us (says the *Boston Cultivator*) by Mrs. B. Shurtleff, of Chelsea. At the usual time of gathering quinces, they were put into barrels filled with water, and placed in a cellar. A few days since they were opened, and the quinces found perfectly sound—not one had decayed in the least. We are indebted to Mrs. Shurtleff for a specimen of the fruit which has thus been kept through the winter, and had just been prepared with sugar in the usual way. It has the aroma, peculiar flavor, and all the qualities of the fresh quince.

We have been inclined to try experiments by the use of freezing mixtures. We have queried whether some of these might not be so *diluted* or mingled with inert substances, as sawdust, so as to liquefy very slowly, and thus, when kept at rest, be made to act moderately, and for a long time. We know, in practice, that a very trifling matter, in appearance, will have sometimes a great effect. Thus, wrapping each apple or pear, or peach, etc., in a separate paper, and carefully packing them in a cool, dry place, tends to delay their decay very materially. Covering them with dry sand has the same effect.

It has also been the practice of extensive fruit-growers to keep their apples carefully packed in barrels, as long as possible under the trees, in the open air. Why this is done we can not tell, but it will be hard to persuade some whom we know to have been accustomed to this practice for scores of years, to abandon it. There may be something in it. And we are more inclined to favor this opinion, from the fact that it has ever been the custom of many English gardeners to expose their potatoes, especially the early ones, to the

sun and air for two or three days ere they are housed, under the conviction that they are thereby improved in flavor, and will keep better beside. They become changed to a green color, more or less, by this exposure. A writer in a recent number of the *Republican Journal*, copied into the *Working Farmer*, assures us that by such exposure they become actually poisonous. He does not inform us what the poison is, and it is strange if it be so. One of our assistants has eaten no others than those thus discolored and made "poisonous" for weeks together, and he thinks the poison must be very slow in its operation, and is certain that its flavor is very fine. Some are in the practice of placing quick-lime in the barrel or pit, so as to absorb the moisture, and they are inclined to believe it may exert some other influence in preserving the potatoes from decay. The potatoes are separated from the lime by any convenient process, as a layer of straw and the like.

As moisture and warmth (60°) are necessary in the process of fermentation, any arrangement which avoids these conditions will have a favorable effect upon the permanence of what may otherwise be subject to speedy decay. Nor can we always give a very satisfactory account of the reason of the thing. Who would imagine, without experiment, that a pint of white mustard-seed would thoroughly arrest the process of fermentation in a barrel of cider, fixing it permanently in the condition then existing? Yet such is the fact, and, after it is discovered, *very* philosophical reasons are assigned in explanation. There is some danger of being too "scientific," and thereby neglecting valuable discoveries. We must "live and learn."

ADULTERATION OF MANURES.

Judging from a late article in the *English Gardeners' Chronicle*, as well as other advices, it appears that the English farmers are having their own troubles with the manufacturers and venders of super-phosphates and other fertilizers. All the honesty at least does not appear to be centred on the other side of the water. The editor of the *Chronicle* says, "there was a time when cheating a Scotchman was about as difficult as cheating a Greek," but that they have sadly degenerated in this particular. In the transactions of the Highland Society, a Mr. G. William Hay, a distinguished agriculturist, gives a kind of autobiography of how he was victimized, which, for the benefit of our readers, we copy. A word to the wise is sufficient.

It appears that being desirous of trying experiments with various manures in the cultivation of turnips, he put himself in communication with a dealer in agricultural manures. Among the substances he wished to employ were super-phosphate of lime, nitrate of soda, phosphate of soda, sulphate of potash, sulphate of ammonia, nitrate of potash, phosphate of magnesia, sulphate of magnesia, and muriate of ammonia. When the parcels came to be chemically examined, the nitrate of soda was found to contain only 56 pounds of that substance in every 100 pounds. The phosphate of soda just 6 pounds in the 100 pounds; the sulphate of potash 60 pounds; the sulphate of ammonia not quite 9¾ pounds; the nitrate of potash about 11¼ pounds; the phosphate of magnesia 2¾ pounds; and the muriate of ammonia 54 pounds only. The super-phosphate of lime (so called) contained only 4 per cent of soluble phosphate of lime, the other 96 pounds consisted of water, gypsum, siliceous

matter, some kind of free acid, and insoluble phosphate of lime, a perfectly useless substance. On complaint being made, the only satisfaction he got was, that they could not think of taking the rubbish back, as it was the *usual quantity* for agricultural purposes.

Mr. Hay also informs the public that in Scotland animal charcoal is not what it ought to be, and that London night-soil consists of the scrapings of the streets, with a little limestone and soil, and that gypsum contains 40 per cent of sulphate of baryta.—*Pennsylvania Farm Journal.*

MANUFACTURE OF ENVELOPES.

The manufacture of envelopes has become an immense business, and though we are not familiar with the processes employed in this country, in this branch of industry, we have been gratified by reading the description of a machine, invented by Mons. Remond, for a long time resident at Birmingham. We find it in the *Publication Industrielle*, and translate it for the benefit of our readers.

After being cut, the envelopes are laid in a pile upon a platform, movable by a counterpoise, or better by elastic springs, so contrived as to rise gradually as the number or thickness of the pile of envelopes is diminished. At the centre of the machine is a vertical shaft, armed at the upper extremity by a cross-bar or beam, or horizontal porte-pistons. At the extremity of this, metallic gluers are fastened, each of which consists of a small iron cap, capable of changing its position, in any direction, corresponding to the different forms of envelopes. These caps pass simultaneously over a gummed roller, and thus cover their lower surfaces with a coating of gum, or paste, which they carry on to the envelope which they have just taken from the pile. Thus the bar turns till it meets a vertical stop, which limits its motion. It then descends, in contact with this forked stop, so as to rest upon the pile of envelopes by the caps alone. As it rises, the upper envelope is sufficiently coated to adhere to the caps, and follows the ascending motion of the bar, which, as it clears the upright stop, again receives a lateral or rotary motion through half a revolution. During this rotary movement, it receives another downward movement, which allows the caps at the other end of the bar to dip themselves in their turn into the gum, so as to repeat the process already described.

It is obvious that this machine, thus contrived, has a double action; that is, each arm of the bar accomplishes at the same time a distinct operation, either to glue, or fold, or take up the sheets.

The forked stop which we have mentioned, is designed to arrest the motion of the bar at the proper time and place, namely, when it finds itself in the axis of the folder. The envelope which adheres to it then descends with the bar, and falls into a rectangular folder, and by this action the four corners are forced to detach themselves and to rest against the perpendicular sides of the box. That part of the envelope which is designed to contain the address, occupies the bottom of the folder, and the four corners the sides. Four cavities serve for a protection to the sheet, and the arrangement prevents the envelope from becoming misplaced when the piston retires. The piston alone enters the interior of the box, and the caps descend on the exterior,

leaving, in succession, the sides coated with gum. During this descending movement the second piston has also descended to draw up another envelope, and so on. Lastly, by this descending movement the movable see-saw which serves as a bottom to the folder, and as an inclined plane to the envelopes to conduct them outside the machine, raises itself during the pressure of the piston, to fall back by its own weight when it is left to itself; that is to say, when the folding is finished, as just described.

When the piston rises again, one side of the envelope, which is folded underneath, closes itself. At the same time the two gummed sides, and then the fourth side, which finishes the folding process. These four sides accomplish their double movement; that is, descending and ascending, or closing and opening, while the bar makes a half revolution. It is then that they disengage the fulcrum of the see-saw, which assumes an oblique position, and conducts the envelopes into a vertical box, where they pile themselves one upon another. The top of this box is widened, like a tunnel, for facility and regularity of movement; and lastly, a piston or rammer descends and compresses each separately, to prevent them from bursting open at the folds.

The envelopes are then taken by a counter, the purpose of which is to separate them into parcels of twenty-five each, leaving a small bit of board, as a weight, upon each parcel.

WEAVING BY ELECTRICITY.

While other nations are preparing their various novelties for the Paris Exhibition of 1855, we are assured (says a correspondent of the *London Times*) that Sardinia will not be behindhand in the scientific machinery department, by a recent experiment made here of the invention of Cavaliere Bonelli, for the application of electricity to weaving, which is more simple, less embarrassing, and, what is of far greater importance, more economical than the invention of Jacquard, which, amidst the general progress of the age in mechanical and technical matters, has undergone but slight modifications in the material construction, and no one has dared to make a change in its principle.

By the present invention, instead of the numberless and expensive cartoons, either full or hollow, you see small iron bars magnetized only when invested with the voltaic current, so that while at every passage of the shuttle it was necessary to change a cartoon, it now suffices to vary the ways which give passage to the electric fluid, and the lodestones change their action every moment, according as the teeth of the comb under which the design passes, and with which they correspond, rest upon the conducting or insulating substance. As the point of the pantograph reproduces a design diminished or enlarged, and as the point of Bain's telegraph exactly copies a signature at the distance of hundreds of miles, so the loom of Bonelli reproduces woven the designs which pass under the comb, and all this without rendering necessary a change in the thousands of Jacquard looms now existing, which, if desired, may be worked alternately with electricity and with cartoons.

Turin first, then Genoa, Lyons, and Paris, saw in operation this prodigious innovation, and unanimously admired the simplicity and reliability of the means with which it is carried into effect. In these cities a loom on a small scale has been shown, but the inventor intends shortly to exhibit in Paris and London a loom on a scale worthy of the places and the invention. After

having secured the property in his discovery throughout Europe, he has just sold his patents to three eminent banking houses, two of them in Turin and one in Lyons, and very soon several looms, which are now being constructed, will be sent abroad to serve as models for the system of electric weaving in most of the manufacturing countries of Europe, and for its introduction into the United States of America an agent is now on the point of starting. It is difficult to foresee the changes which may spring from the application of this new agent to the business of weaving, as not only the economy consequent on it must induce a decline of prices, but the new means afforded by this invention will render easily attainable results such as are now only reached with difficulty or with great expense, as Gobelin tapestry, etc., and others utterly unattainable by any means hitherto known. Even in the present age, so rich in useful and important inventions, no doubt this will rank among the first.

BIRDS: THEIR UTILITY.

We do not always know our best friends. But experience sometimes teaches us, working out for us conclusions very unlike those we had previously entertained. In the history of birds, similar examples are not wanting. A writer of note says, "After some States had paid three-pence a dozen for the destruction of blackbirds, the consequence was a total loss, in the year 1749, of all the grass and grain, by means of insects, which had flourished under the protection of that law." Another ornithologist, Wilson, computes that each red-winged blackbird devours, on an average, fifty grubs daily during the summer season. Most birds live entirely on worms and insects, and though some are destructive to our cherries and other fruits, the numbers of such are small, and these propensities are to be offset by numerous and valuable services which no other agencies can perform.

The following descriptions may throw light upon the treatment these birds have a right to claim at our hands:

The *Baltimore Oriole*, a beautiful and well-known bird, called sometimes Gold-robin, Hang-bird, etc. It feeds chiefly on insects, and its services are of great value. They visit our gardens for grubs only, and thus protect our pea-vines and other plants from a destructive enemy.

The *Red-winged Blackbird* often arrives at the North ere the snow has disappeared. It feeds on grubs, worms, and caterpillars, without inflicting any injury upon the farmer. Hence it does him a very important service.

The *Cow Blackbird* is less numerous than the species just described. They follow our cattle, and catch and devour the insects that molest them. From this fact they derive their name.

The *Rice-Bunting*, or Bob-o-link, is constantly employed in catching grasshoppers, spiders, crickets, etc., and thus does good service. It is, however, said to do some injury to grain, especially at the South, and particularly when they collect their young in flocks preparatory to a flight toward their winter quarters.

The *Crow Blackbird* is one of our early visitors. While it devours immense numbers of grubs, etc., it is also clearly proved that it pulls up the corn. Southern farmers attempt to diminish the amount of such depredations, by soaking their corn in Glauber's salts, making it unpalatable to the birds.

The *American Crow* devours every thing eatable, without much apparent choice, whether fruits, seeds, vegetables, reptiles, insects, dead animals, etc.

The *Cedar-bird* gathers caterpillars, worms, etc., which it devours with an insatiable appetite. Our cherries and other fruits are not spared, but are devoured, in their season, as rapidly as are the canker-worms, and other enemies of the trees, in their season. But whatever injury they may thus inflict seems irremediable, as their numbers can scarcely be diminished by any agency in our control.

The *King-bird* lives wholly on insects and worms, without any mischievous propensity, unless it be occasionally to devour honey-bees. That he has a taste for such food is pretty well established, though some deny it.

The *Cat-bird* is constantly employed in devouring wasps, worms, etc., but does not always spare our fruits. They devour of the latter, however, much less than would the insects they destroy.

The *Wood-thrush* lives on worms, beetles, etc., and never commits depredations of any kind. Their residence is much more constant in the extreme South than further north.

The *Blue-bird* confines himself to the destruction of beetles, spiders, grubs, wire-worms, etc., and though they attack the sumac and wild-cherry, and other wild berries, they do no injury to the fruits or vegetables of the garden.

The *Golden-winged Woodpecker* is reputed as a fruit-stealer, but, "with all its faults," it is of great use to the horticulturist.

The *Red-headed Woodpecker*, like the former, helps itself to fruits of all kinds, carrying off apples even in its bill; but this useful laborer is also worthy of his hire; it does much more good than evil.

The *Downy Woodpecker*, and perhaps some other species, come under the same category as those species already described.

CRESCENT IRON-WORKS.

These works, located at Wheeling, in Virginia, belong to a Company incorporated by the Legislature of Virginia, who are now enlarging their capital for the purpose of carrying on a more extensive business. The following particulars relate to the property of the Company and their preparations for the manufacture of iron for useful purposes:

The Company owns and places as part of the stock under the charter, large tracts of ore-land in Monongalia and Marion counties, Virginia, within seventy miles of Wheeling, and near the Baltimore & Ohio Railroad and the Monongahela River. This land abounds in ore of the best quality, and of sufficient quantity to last for centuries to come. It yields forty-five per centage of iron, is a four-feet vein, and is in the same hills and together with a bituminous coal-vein of seven feet thickness, and plenty of lime and sandstone, together with an abundance of timber and wood. They have now one furnace in operation that will yield some eight or ten tons per day, and they desire to erect with the additional stock two or three additional furnaces. The iron from these furnaces is brought to Wheeling at a cost of less than two dollars per ton, including wagoning, loading, railroad expenses, etc.

We will not state the cost of the manufacture of pig-iron at these works,

for persons manufacturing and quantities made may vary the cost materially. We will only state a few facts. The ore is delivered at the furnace at fifty cents a ton cost; labor is cheap, for the country is alike healthy and productive; and land and produce as cheap as in any other part of the country. There is every thing here combined to produce as cheap labor as at any place in the country. In addition to these advantages, the following facts show that in the simple item of cost of coal there is money to be made in this stock, as compared with eastern works. It requires six tons of coal to make, from the ore, a ton, say, of rails. This coal costs in the most favored localities east, four dollars per ton, - - - - - - - - - - $24

Coal at these furnaces, and at the Crescent-Mills in Wheeling, costs less than one dollar per ton, - - - - - - - - 6

Saved, - - - - - - - - - $18

This is the saving made here in the item of coal alone for the manufacture of one ton of rails from the ore. Then for the supply of all western roads there is a saving in freight of five dollars per ton, giving these works, in these two items, a saving, all else being equal, of twenty-three dollars per ton. The iron from the works has been in use and is thoroughly tested, and found the best of iron, and the coal to be free from sulphur.

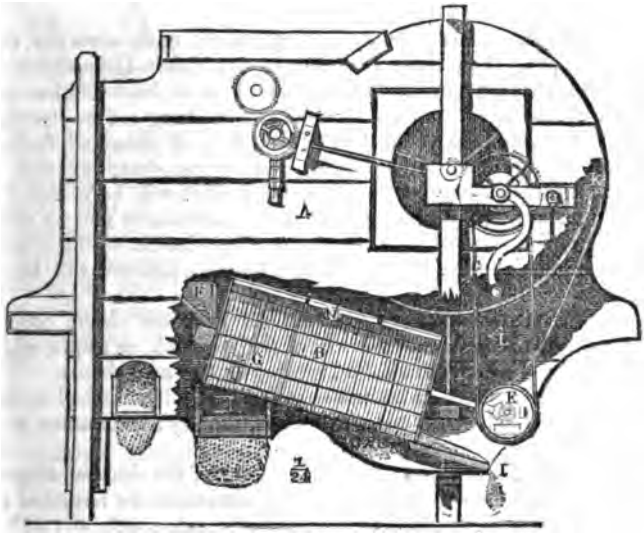
These works are peculiarly situated for economy and facility of operation, and we will describe them for the benefit of those who have not seen them. Wheeling Creek passes into the river through the heart of the city, and through the gorge in the hills that line the margin of the Ohio, and cause that picturesque beauty that gave the river its title of *La Belle*. The Crescent-Mills are situated on the south side of this creek, about six hundred yards from its mouth, where what is called Chapline's-Hill originally came down almost to the creek, and the road around it has been formed by taking out the rock for the building and the dirt and stone from the stripping the quarry. The works are so situated in the city that the dwellings of the hands are hard by; they are on a hard and level street, to the river but six hundred yards distant; they are on the bank of the creek, so that the sewers, which are large, and of stone, take off the ashes and refuse without expense or labor; the refuse of mill adds daily to the ground, instead of involving cost to carry it away; the creek affords the means of transit of ore and iron by barges from and to the railroad and steamboats, in the cheapest manner possible. The Baltimore & Ohio and Hempfield Railroad depots are within the six hundred yards distance, while the mouth of the coal-bank in our best coal-vein of six and a half feet of bituminous coal is not more than fifty feet from the works, and about thirty feet above the level of the ground.

The building for the works is one hundred feet wide and four hundred feet long, and from the eastern end, elevated to a level with the coal-bank, is extended a railroad track, on which coal is run in cars, and let down, without handling, by the side of each furnace. There are thirty-six puddling and fourteen heating furnaces at work. Three trains of muck-rolls, two of Burden's patent coffee-mill squeezers, one train of sheet-rolls, of boiler-iron rolls, one of bottom and top-rolls, and one full train of rail-rolls, with saws, punches, and all the necessary fixtures to make the mill complete for making rails in the most approved manner, the proprietors having availed themselves of all the improvements in other mills, and their works will compare favorably with the best mills in this or any other country. The machinery is driven by two engines of great power, and will turn out 15,000 tons of the best iron per year.

WINNOWING MACHINE.

This winnower involves a most complete departure from the principles hitherto followed in machines of its class. In it the separating action is produced by a rotary wire cylinder, into which the crude grain is fed at one end, whilst air is forced in at the other, to aid in driving off the chaff and foreign matter. A patent was secured for this machine in England, in October, 1853.

Our engraving represents the machine in side elevation, with a portion of the external case broken away, to reveal the disposition of the internal details. The grain to be dressed is supplied to the usual hopper in the upper part of the case, A, whence it runs regularly out, with the aid of a rotatory pegged or plated cylinder, driven by the gearing shown outside the case. On leav-



ing the hopper, the grain first of all falls upon a horizontal vibrating screen of the common kind. This gives a partial cleansing action before reaching the main screen, B. The latter is driven by an endless belt, C, from a pulley on the first motion winch-shaft, this belt being passed over a pulley, D, driving the inclined screw-spindle by a bevel-pinion arrangement, E. The grain falls from its primary flat screen into a trough, whence it is conducted by the discharge-passage, F, into the upper end of the inclined screen. The first "tailings," separated by the primary riddle, pass off by the inclined trough, J. The next tailings are sifted through the upper part, G, of the rotary screen, and they fall away by the inclined trough, H. This upper portion of the screen is made finer in its mesh than the lower portion, and hence the tailings are correspondingly different. The last and best tailings pass off through the lower compartment of the screen, B, and the dressed grain falls out of the lower end of the screen, along the incline, I.

The screening air-blast is derived from the usual fan, the air passing from its air-chamber through the passage, K, as indicated by the arrows, and entering the open lower end of the screen, B. To keep the screen clean and free,

a brush, M, is fitted, so as to bear upon the wirework in its revolution. This brush is the same length as the screen, and it has liberty to move on hinges or joints, so that it may have a slight yielding action.

When applied in combination with a threshing-machine, the threshed grain is at once cleansed in this way, without any intermediate operation. In such a case the wire of the screen is finest in the mesh at the upper end, then a little coarser at the middle, and coarser again at the lower end; so that the first and second taillings pass through the two upper sections, and the grain through the lowest one. Stones, or large foreign bodies, all pass out at the mouth of the screen.

ELASTIC POWER-ACCUMULATORS.

Among the curious inventions of the day, few are more *attractive*, (we did not intend a pun,) than those included in our title. India-rubber shoes, clothes, combs, etc., are familiar to us all, and here we have another application of this wonderful substance. A small rubber string can be stretched by any child. Now, suppose he has ten, twenty, forty of these, all fastened at one end to the same spot. If he begins, one by one, stretching each to the utmost, and attaches them to a movable object, what will he witness? Nothing, perhaps, at first, but as he continues the process, by and by the accumulating power of these cords will overcome the inertia of the object, the cords will contract, and the object to which they are fastened will be drawn away from its position.

This process may be managed systematically, and the elastic cords combined at one end, or all connected with a ring, or hook, or staple, while the free end is adapted to such modes of fastening as one may choose.

A pound of vulcanized India-rubber, a foot long, if stretched to six feet, will support four hundred pounds. It follows, that by a little union of forces immense power may be obtained.

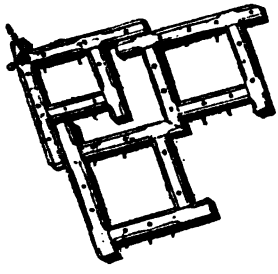
A modification of a boy's bow and arrow is one of the simplest adaptations of this power. If a smooth tube of suitable dimensions be furnished at one end with a looped cord, fastened to it on opposite sides, with any additional provisions for convenience in handling it with facility and accuracy, we get an engine perhaps as powerful as an air-gun. The tube furnishes an accurate guide for the arrow, and the arrow being drawn back, while locked into the elastic cord, by a notch, as into the string of the bow, it will escape, when liberated, with a force corresponding to the tension of the loop.

Harpoon-projectors are contrived on this plan, and in fact there seems no end to the modified forms in which this remarkable substance may be made useful. In the *harpoon-projector* several cords are applied, each of which is extended singly, and when all are properly arranged, the harpoon is set free by a trigger-movement.

A patent has been taken out in England, for the application of this "power" to different purposes, and we are informed by an English journal that this has been substituted, as a motive-power, for steam, and that a small screw-vessel is now in progress with the same sort of a "prime-mover." How this substitution can be made effective is beyond our conjecture, as we do not comprehend what power is to operate the elastic force.

UNIVERSAL FLEXION HARROW.

Among the useful inventions exhibited at the Crystal Palace, in the agricultural department, is the harrow described in our caption. Its peculiarity is indicated by its name, and it promises to be of considerable service, allowing every part to do its full duty, however irregular the surface of the ground may be. One of its chief practical merits consists in the simple but efficient nature of its hinges. Machinery may be generalized into two classes,—that which meets and that which does not meet with careful attention. The thoroughbred mechanic, to whom bad work is a most disgusting eyesore, is inclined to devote all his energies to perfection and improvement in the first of these classes; so that the number of those who can make self-acting mules to go in the cotton-mill, is possibly greater than of those who can properly construct a weather-cock for its top. In the case before us, any delicate hinge would be quite misplaced, and all the difficulties, whatever they may be, have been overcome by the adoption of a "hook of double curvature," or a hook with its shank bent nearly at a right angle; so that, although readily connected by the most unskillful farmer, and perfectly free to turn in every direction required by the flexible nature of this triple harrow, it can not be disconnected, except by doubling the parts into an angle never assumed in the ordinary work of the field. This simple harrow is the invention of Mr. George M. Ramsay, and was patented on the 2d of May, having been previously patented in England.



ON ALLOYS, CONSIDERED IN RELATION TO THEIR CHEMICAL COMPOSITION.

BY M. A. LEVOL.

Translated from the Annales des Mines.

M. Levol seeks in his memoir to throw light on an important question. Are the alloys of metals definite combinations, mixed with an excess of one of the metals employed, of which a too rapid cooling does not permit the separation; or can metals combine with each other in all proportions? M. Levol considers especially the alloys of silver and copper. Even to the middle of the last century the alloys of copper and silver were believed perfectly homogeneous. Crammer and Jars (1774) were the first who announced the heterogeneity of poor alloys, and indicated the "*prise d'essai à la goutte*" in the melted alloy, as the only means of obtaining exactly the richness of the whole mass. Toward 1825, the heterogeneity of rich alloys was well proved by numerous experiments, made under the direction of M. Darcet, during 1824 and 1825.

M. Darcet arrived at this conclusion: that the alloys are always heterogeneous; that the poor alloys are less rich at the centre, and that the rich alloys are more rich at the centre. M. Levol has studied a certain num-

ber of alloys of copper and silver, of determinate atomic compositions, cast into little spherical moulds of cast-iron, with an attached arm sufficiently long that the sphere may cool slowly. He has determined for each alloy the richness of its different parts. He found that the alloy $Ag.^3+Cu.^4$, whose degree of fineness is 718.32, is very homogeneous after cooling slowly. This homogeneity has been proved, not only with little trial-spheres, but also on an ingot weighing 48 pounds, made on purpose. Its density was 9.9045, and in calculating it after the proportions of the two metals, the number would be 9.998. Homogeneity allows us to conclude that the alloy is a definite combination of the two metals.

For the other proportions tried, the spherical ingots have always presented a notable heterogeneity, which proves that they are mixtures of one of the metals in excess with the definite combination.

For alloys less rich than the combination $Ag.^3+Cu.^4$, the centre of the spheres is always less rich than the exterior parts. The inverse takes place for alloys more rich.

PAINT FOR BUILDINGS.

This is the season of the year which many farmers prefer, and wisely, too, for painting their houses or out-buildings. After the intense heats of summer, in which the wood absorbs a very large proportion of the oil of the paint, leaving the mineral portion quite too dry to be durable, and before the heavy fall rains commence, it is probably the best time to perform such labors.

And what color will you have? There are but few colors between which we should hesitate. These are white, and different shades of brown or stone-color. We are pleased with the effect of a clear white in the country, among the green leaves of the yard. For this, white-lead has been regarded as the best, and, in the end, the cheapest paint. It remains permanent longer than almost any other, if properly done, the oil and lead combining to form a very hard and durable coating. White-lead, however, has a powerful competitor in the white oxide of zinc. This paint holds its color remarkably well, and is claimed to be superior to white lead. It certainly appears well when newly applied. As to its comparative durability, we have heard very favorable accounts. It certainly presents, when new, a very handsome and very hard surface.

For dark colors there is more room for choice. There are dark zinc paints, but we have no personal knowledge of them. Blake's paint, also, which has been advertised in our journal, is a very good paint, and is thoroughly fire-proof. It is of a dark chocolate. Another variety is black, or nearly so.

A brown paint, which has come somewhat extensively under our notice, is a composition in which yellow ochre, verdigris, ivory-black, umber, and white lead, are the ingredients. Their proportions may be varied according to the taste of the landlord, but the result will necessarily be a dark color, running through all the shades of brown and chocolate. The ochre is of course the principal ingredient, and the other paints will be required more or less sparingly, as one may wish to depart from the color of the base. These colors are seen very frequently in the suburbs of Boston, so famous for elegant summer residences.

For fences and some out-buildings, coal-tar, which is much cheaper than the proper paints, serves a very good purpose, and if it does not add beauty to the substance to which it is applied, it certainly does promote its durability.

RECENT ENGLISH PATENTS.

Among the patents recently granted in England, and which can be understood without engravings, we select the following from our English journals:

Wheels and Axles.—T. W. Dodds, *Rotherham.*—In making his improved wheels, Mr. Dodds primarily rolls the malleable iron, or the raw material for the tyres, into long strips or bars, and these bars are then coiled up into a helix, or volute, and the folds or contact surfaces are rolled or hammered together at a welding heat, for the thorough incorporation of the metallic layers; so that in this way the thickness or transverse section of the tyre is welded into a homogeneous mass throughout, instead of having merely a single weld at one point of the circle. And in combining the details of the improved wheels, the tyres are rolled with longitudinal side flanges on the inner surface, for the reception and holding up of the outer ends of the spokes or wheel arms. The boss of the wheel is of a conical shape, and the inner ends of the spokes are correspondingly bevilled, so that, when the latter are laid round the nave, the cone is drawn up laterally by means of a plate on the wheel face, fitted with adjusting bolts, and the cone action then forces out all the arms or wheel spokes in a radial direction, bringing their outer ends to bear hard up against the interior surface of the tyre, and binding the wheel into a solid mass. The spokes may either be of iron or wood, or other material, and they may be arranged to produce a wheel either solid, or nearly so, or open-spoked. When wood is adopted for the spokes, the pieces are first suspended over boiling tar, or bitumen, and so as to be subjected to the effect of the ascending vapor, which acts as an excellent preservative against decay from chemical causes; or, instead of this system of treatment, the wood may be boiled in a composition of red lead and bitumen.

In faggoting up the improved axles, the separate pieces, out of which the required solid axle is to be produced, are individually rolled or shaped with a species of duplex or other incline of a like character; so that when the pieces are laid together, they dovetail or combine with each other, in such manner, that, when rolled or laid under the hammer, the rolling or hammer action forcibly combines all the contiguous or contact surfaces together, and effects a good metallic binding down to the centre of the incorporated mass. This is the system of construction to be followed in the manufacture of solid axles; but hollow axles are made in the same manner, modified only as regards the leaving a tubular centre in the mass.

Safety Apparatus for Steam Boilers.—E. Walmsley, *Heaton Norris.*—This invention has in view the prevention of steam-boiler accidents, caused by a scarcity of water. This object is effected by causing the water in the boiler to issue out upon, and extinguish the fire when the level falls below the proper point. A pipe conveys the water from the interior of the boiler to a spout or rose in front of or above the fire, and a valve fitted on the inner end of this pipe is worked by a lever connected to a float, so that, as the water-level falls, the float falls with it and opens the valve. At first the valve will open to a slight extent, allowing but little water to issue. This will serve to attract the notice of the attendant; and to aid this, a small opening should be made in the bend of the pipe outside the boiler, so that the water may be seen to issue. If attention is paid to this signal, and a supply of feed-water be admitted into the boiler, the valve will speedily

be closed, owing to the ascent of the float as the water-level rises; but should no notice be taken of the indication of danger, the further fall of the water-level will cause the valve to open still further, until a powerful jet of water is, by the steam pressure, ejected over the fire, rapidly extinguishing it, and preventing any serious results.

ORNAMENTAL FABRICS.—J. LYLE, *Glasgow.*—This invention relates to the manufacture of figured or ornamental fabrics, for carpeting, tapestry, and other goods, as well as chenille, whereby all the necessary colors to be used in weaving a given fabric are applied by means of a single shuttle, instead of using a reduplication of that apparatus, as hitherto employed in manufactures of this nature.

In manufacturing ornamental fabrics according to this general process, the weaver, having his pattern or device drawn out on paper in the usual way, reads off each color as it appears in the length of the piece, and then assigns to each portion so much of the figuring weft as will produce that particular extent of color in the woven piece. For example, if he starts with three lines of blue, he measures, by a predetermined standard, so much of his blue figure weft as will weave up into these three lines in the piece. This length of blue weft is then wound upon a reel or other holder; and if the succeeding color is a red, as much of a red-colored weft is taken as will weave into the number of red lines at that part of the figure, and this red length is then tied or attached to the preceding blue length. This process is continued throughout the entire series of colors in the length of the figure, until the necessary parti-colored chain of weft is made up. The shuttle is then supplied with this weft, by means of pirns wound up from the chain. This reduces the ornamental weaving to the simplicity of plain weaving, as only one shuttle is used in weaving a piece of cloth, whatever number of colors there may be in the pattern or ornamental figure, each link or length of colored weft in the chain being brought into use at the proper time, by the simple process of unwinding from the pirn of the shuttle, just as it would be by means of the complex "drop-box" and an entire change of shuttle. The fabrics so woven may either be used simply as carpets or tapestry of the ordinary kind, or they may be cut up for the purpose of making chenille.

BLEACHING AND SCOURING.—J. HIGGIN, *Manchester.*—Mr. Higgin's invention consists in the use of a new compound or mixture, to be used in the operation technically known as bowking and kiering, instead of, or in connection with, the ordinary process of boiling in a solution of soda-ash, or a solution of resin in soda-ash. The cloth or yarn to be bleached or scoured, to the amount of 3500 lbs. weight, for example, after being singed and washed in the ordinary manner, is folded into a kier, during which operation milk of lime is thrown over it; or the cloth or yarn prior to entering the kier, may be padded by or passed through the lime, so as to absorb it equally. A sufficient quantity of water is then added, and from one to two gallons of a solution of chloride of lime. Steam is then turned on, and the liquor is kept boiling about fourteen hours, after which the cloth or yarn is removed, washed in water, and steeped in or passed through dilute sulphuric or muriatic acid. On leaving this solution, the material is washed in water and folded into a kier, into which has previously been put the following mixture:—In an iron or other vessel are put 30 gallons of water, 120 lbs. soda-ash, and 80 lbs. American resin, gum-thus, or any other cheap and efficient resin. This compound is boiled for eight hours by means of injected steam, and 25 lbs. lime, previously slacked to a pasty consistency, are then added to it. This

mixture is boiled six hours, and then transferred to the kier into which the cloth or yarn is folded; sufficient water is then added, and the whole boiled for about fourteen hours. In some cases it is preferable to boil the mixture of resin and soda-ash in water for fourteen hours, then to put it in the kier, and, after adding the slacked lime, boil it for about twenty minutes, after which the cloth or yarn is introduced and boiled. When sufficiently boiled, the cloth must be removed and washed with water, after which it must be steeped in or passed through a dilute solution of chloride of lime. It may now remain wet for a few hours, or it may be immediately passed through dilute sulphuric or muriatic acid, after which it must be washed and dried. In some cases it may be convenient to give the goods a second boil in a kier, with the aforesaid mixture of resin, soda, and lime, but in smaller quantities, or in a solution of resin in soda-ash, or in a solution of soda-ash alone, but for most purposes, the aforesaid process will be found sufficiently effective.

MANUFACTURE OF IRON AND STEEL.—T. W. DODDS, *Rotherham*.—This invention relates to the primary treatment and manufacture of iron and steel from the raw material or metal, and to the application of such manufactured metals, or the steeling or case-hardening process thereof, to special articles of metal manufacture. In making a mass of steel by this process, the operator places the raw unmanufactured material, or wrought-iron, in a chamber or furnace containing a mixture of any suitable carbonaceous matter, as charcoal, by preference, potash, pearl-ash, or other alkaline matter, and carbonate or bicarbonate of lime, as marble chippings, gypsum, oyster-shells, or other matter containing lime. The common kind of furnace may be used for this process, but it is preferred to adopt a plan of furnace wherein a range of retorts is so built and contrived, that the working heat may be kept up uniformly or nearly so, whilst the charging and discharging operations are going on, each retort being drawn in succession, and the treated metal plunged into a wet or dry carbonaceous bath or bed to cool. By the adoption of this system, the furnace is prevented from sustaining injury from rapid heating and cooling, whilst the cost of the process of manufacture is considerably reduced. For the production of a non-oxydisable metal or steel for various uses, a quantity of nickel is incorporated in the metal in any convenient manner. And in the annealing of wrought-iron articles, or articles partially steeled or case-hardened, a bath or compound mass of carbonate of lime and soda, pearl-ash, or potash, is used. This treatment produces a fine soft fibrous metal, and the process is especially valuable for softening the inner non-abrading portions of railway wheel tyres.

FILES, RASPS, AND EDGE-TOOLS.—T. W. DODDS, *Rotherham*.—This invention relates to the manufacture of files, rasps, saws, augers, rose-bits, and other edge or cutting and abrading tools, from the crude or ordinary raw metal, as wrought-iron, or partially converted steel; the articles so shaped being subsequently hardened for use, by placing them in a chamber containing a mixture of carbonaceous matter, as charcoal, by preference, and potash, pearl-ash, soda, or soda-ash, or other alkaline matter; limestone, and carbonate or bicarbonate of lime, as marble chippings, gypsum, oyster-shells, or other matter containing lime, and any material which, being burned, forms animal charcoal. In carrying out this invention, it is proposed to use furnaces of a similar construction to those shown and described in the specification and accompanying drawings of letters patent, granted to Mr. Dodds on the 7th April, 1853; a notice of which will be found in the present Journal.

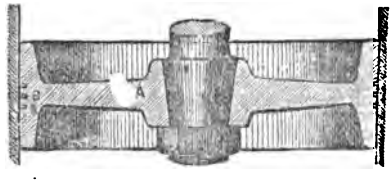
The essential object of this invention is the case-hardening, or converting of files and other tools in a partially manufactured state, from bars partially converted by the use of the process and materials described, or by the use of any other carbonaceous material. By this invention the tools may be made of very high quality, and at a cheaper rate than usual, whilst special varieties of difficult construction are easily formed in this way.

Ornamental Fabrics.—J. & W. Hood, *Glasgow.*—This invention relates to that part of the manufacture of fabrics of the lappet class, wherein the loose surface threads produced in forming the device are cut from the piece to bring it to the finished state. Any ornamental fabrics may be treated by this process, provided the device, being of the lappet, leaf, or harness class, is made up of spots or regularly-disposed isolated portions of interwoven weft. To accomplish this process, a duplex cutting scissors is used. Such scissors are in each case composed of a central stationary blade, with a cutting edge on each side, and two other side blades, with a single cutting edge on the inside of each blade, to work in contact with the two edges of the central blade. A number of such scissors are fixed in a frame in positions corresponding to the pattern to be operated upon, and the fabric is traversed beneath the series, and directed so that the scissors shall cut each end of the loose surface or waste threads, leaving the spots or devices standing in their finished condition. Instead of three blades in the scissors, the same effect may be produced with two blades cutting vertically, each blade having two cutting edges, so as to sever each side at the same time. Such system of treatment or manufacture does away entirely with the necessity for hand-cutting with scissors, and effects great economy in the production of the finished fabrics.

Ventilating Case for Millstones.—Charles Lowe, *Atherstone.*—The object of Mr. Lowe's contrivance is the removal of the vapor and moisture generated in the grinding action of millstones. In ordinary arrangements, the vapor, which the heat of grinding brings out, does not readily descend through the spouts, and owing to the centrifugal force given to it by the runner, it cannot escape over the back of the stone. Hence it condenses and forms a paste in the case and spouts. Mr. Lowe obviates the evil by using a skeleton or ventilating case, covered with bolting cloth, that will retain the flour and allow the heated air and moisture to escape. The effect of this modification is further assisted by covering the spouts in a similar manner.

Ramsbottom's Improved Steam Piston.—Mr. John Ramsbottom, of Manchester, has lately introduced a novel form of piston and packing, which has been successfully tried in several locomotive-engines. Our engraving, fig. 1,

Fig. 1.



is a section of the new piston, and fig. 2 is a section of one of the packing rings drawn full size. The piston consists of a single casting, A, without cover, bolts, or nuts, and is fixed upon a conical part of the piston-rod by a nut. Three separate grooves, each ¼ in wide, ¼ in. apart, and 5-16 deep, are turned in the circumference, and these grooves are fitted with elastic packing rings, B. These rings, which may be made of brass, steel, or iron, are drawn of a suitable section to fit the grooves in the piston, and are bent in rollers to the proper curvature, the diameter of the circle to which they are bent being about one tenth larger

than the cylinder. They are placed in the grooves in a compressed state, and, along with the body of the piston, are thus put into the cylinder, care being taken to block the steam-port, so as to prevent the rings from getting into it. The rings are forced outward by their own elasticity, which is found quite sufficient to keep them steam-tight. The joints of the rings are placed in some part of the lower half of the cylinder, so as to break joint. The body of the piston, resting as it does upon the bottom of the cylinder, prevents the steam getting at them; should it, however, by any chance pass the joint of the first ring, it is all but impossible for the solid part of the piston to be so far out of contact as to allow access to the second, and, of course, still more so to the third joint. It is now sixteen months since the first pair of these pistons were put to work, and others have since been made to the number of thirty pairs, the whole of which are realizing all that could be desired. One piston has been at work fifteen months, and has run a distance of 19,650 miles. A set of rings will run from 3000 to 4000 miles, and cost, when new, about 2s. 6d.; so that, in examining and cleaning a piston, the renewal of the packing is of little more consideration, so far as cost is concerned, than if the piston were hemp-packed. A careful average of the consumption of the fifteen engines which were first fitted with these pistons, and which have since run intervals of time varying from four to sixteen months, and an aggregate distance of 269,800 miles, shows a reduction, when compared with the duty of the same engines for four years previous to these pistons being put in, of 5·7 lbs. per mile; a result which has been carefully arrived at, and which goes to show that this piston, either from greater average tightness, or reduced friction, or both combined, is greatly superior to those which it has superseded.

Fig. 2.

RECENT AMERICAN PATENTS.

Brush for Washing Bottles.—This invention consists in a rectangular-shaped folding-brush, having three sides formed of solid strips and set with brushes, by which the top, sides, and bottoms of bottles, etc., are cleansed by a single operation. By A. H. Rauch, Bethlehem, Pa.

Machine for Cleaning and Watering Streets.—The nature of this invention consists in depositing the dirt thrown up by the movement of a rotary-sweeper in a chamber in the rear portion of the machine, by means of a draught created by a revolving fan or blower, the sweeper and fan being operated through suitable gearing by the forward movement of the rear wheels of the machine, and also in using, in connection with the fan and sweeper, an apparatus for distributing water, forming by the combination a machine that effectually cleans and waters the streets, and removes the dust, without annoyance to the neighboring residents and passers-by. The service is performed by means of a rotary-sweeper beneath the machine, combined with a fan revolving at high speed in an external chamber, which is connected by passages with the chamber which first receives the dust and the chamber of deposit, by which arrangement the dust is driven within the action of the fan by the sweeper, and is by suction drawn to the fan-chamber, where it is driven to the chamber, and there deposited; the air in passing out under

strong pressure through the finer reticulations, in the cover of said chamber. By Ross Deegan, of New-York.

Improvement in Steam-Generators.—This boiler is composed of a continuous pipe, which is surrounded by a fire-box which answers to form the furnace, and contains water similar to the fire-box of a locomotive-boiler. This pipe commences at the bottom with one pipe being connected by turns alternately at the ends, thus forming a continuous pipe for some distance up, then it divides into two pipes, then ascending some distance, as before, it divides into four pipes, and thus it can be carried to any extent by any number of divisions. The object of this improvement is to shorten the length of the pipes through which the steam is generated, and at the same time increase the capacity of the pipe at every division, for the purpose of allowing the steam-room to expand as it is generated. The difficulty in using coils of this kind heretofore has been the great length and the numerous turns it has to make, and this is obviated by this improvement. By A. B. Latta, Cincinnati, Ohio.

Improvements in Feathering Paddle-Wheels.—The nature of this invention consists in the bowing or arching of the shanks within the interior of the hub, or so many of them as may be necessary, so as to secure the many advantages of the solid or connected shanks through the hub, with double blades standing at right angles with each other, and at the same time allow them to turn to feather the blades, in connection with the compactness and utility of having the paddles all arranged in the same transverse line in the hub or socket flanges, and also in a guide for reversing the feathering of the paddles, whenever the motion of the wheel is reversed, by a very small movement in the direction of the axis or shaft, instead of, as has been done, by turning the frame of the guides around the wheel beyond the extremities of the blades.

The object of arching the shanks of the paddles, it will be seen, is to enable them to be passed entirely through the hub, and in the same transverse line, thereby greatly reducing the amount of turning and friction in feathering the blades; for when two blades are connected to the opposite extremity of the same shank at right angles, the motion and amount of friction is one half less than when the paddles are arranged and connected to separate shanks, which do not pass through the hub, and consequently not permanen at right angles. By Thomas Champion and Samuel Champion, of Washington, D. C.

Improvement in Seed-Planters.—This invention relates to that class of machines which are operated without the use of horses, and which are carried, instead of being trundled over the ground, and consists in vibrating the seeding-bar, by the motion of the leg of the operator in the act of walking, by means of a rod attached to the leg, and a bell-crank lever, attached thereto and to the seeding-bar, or other equivalent means. By Waitman Davis, Morgantown, Va.

Improved Lathe.—This improvement consists of two systems of cutters or knives acting in different directions at one and the same time; one forming a perfect cylinder, and the other leading it out or forming any desired figure or moulding thereon, according to a pattern designed, and these acting in combination with certain rests adapted by differently-sized bushings to suit the various diameters required. By Harrison O. Clark, Worcester, Mass.

IMPROVEMENT IN CARRIAGES.—This improvement is principally adapted to light vehicles—such as four-wheeled buggies. Instead of making the reach of the carriage of wood or iron, without spring, the entire reach is made of a spring, and this spring is so connected with the front axle as to form a swivel-joint, by which a number of parts, bolts, screws, nuts, etc., are dispensed with, and the cost very materially reduced. By James L. Rolwey, Steuben Co., Ind.

IMPROVEMENT IN HARVESTERS.—The double-edged shear-blades or cutters, operated by the driving-wheel, which communicates a reciprocating motion to the bars to which the blades are pivoted, cut the grain, which then falls upon the platform; the reciprocating rake advancing, with its teeth elevated, clears the platform of the cut grain, and deposits it in bundles on the ground, at the side of the machine, ready for the binder, and then returns, with the teeth depressed, to repeat the operation. By Ira Reynolds, Republic, Ohio.

IMPROVED PROCESS IN TREATMENT OF PAINT.—The pigments employed for this purpose are such as are ordinarily found in market in the dry state, and they are finely mixed. The albumen employed is incoagulated, and such as is usually found in commerce in a dried state; it is also pulverized finely. The dry pigment and albumen are mixed in due proportions, and put up in papers, kegs, or any other suitable manner, and may be kept for years if preserved from moisture. At any time that the paint is required, it is only necessary to mix the composition of pigment and albumen in a suitable quantity of soft water, which should stand long enough for the albumen to be dissolved; the whole should be then thoroughly stirred up, when it is ready to be spread by a brush over the surface to be coated with it. After the paint is applied and has time to dry, it should be treated by some substance which will neither decompose nor bleach the pigment, nor stain either the pigment or albumen, but which will coagulate the latter. A jet of steam is very effective for this purpose, but washing the surface with alcohol will accomplish the object very satisfactorily. After the albumen has been in any manner coagulated, it must be suffered to become dry and hard before it is again disturbed. The surface presented by paint thus treated is *flat*, but it may, if desired, be varnished to give it a gloss. The proportions of albumen required for different kinds of pigments vary very much. By Gabriel Bloudin, New-York.

IMPROVEMENT IN PAINT-COMPOSITION.—This is claimed to be a security against the action of water or alkaline solutions usually employed in cleaning painted surfaces. The inventor says: "To effect this result, I mix the pigments with albumen, which is, in its primitive state, soluble in water, but becomes insoluble when coagulated. The proportion of albumen will vary with different coloring substances; as, for instance, those of which the form of the particle is crystalline, are more readily fixed than those of a globular form, and less albumen would be required." By Gabriel Bloudin, New-York.

IMPROVEMENT IN WEAVING DOUBLE CLOTH.—This relates to a class of fabrics which are suitable to be printed upon one side, such as carpets, etc., in which only one side is exposed to view when in use. Any ordinary loom can be used for weaving this fabric if it has four harnesses, and is capable of using two shuttles and two warp-beams. In one of the shuttles, filling-thread of cotton or linen is used, and in the other a thread of woollen. Into two of

the harnesses cotton or linen warps are drawn, and into the other two, woollen warps. Numbers one and two contain woollen or worsted warps; numbers three and four, cotton or linen warps.

First. Raise the first and third harness, depress the second and fourth, then throw in cotton or linen filling.

Second. Raise the first and depress the second, third, and fourth, then throw in wool-filling.

Third. Raise the second and fourth, depress the first and third, then throw cotton or linen filling.

Fourth. Raise the second, depress the first, third, and fourth, then throw woollen filling.

This operation produces a fabric which has a surface of wool upon one side, and of cotton or linen upon the other side, which surfaces are interwoven into each other in the middle. By Samuel Fay, Lowell, Mass.

Improved Burglars' Alarm.—This invention consists in attaching to a door or window a fastener of peculiar construction, and a hammer-dog and spring, so arranged that the hammer will be liberated and thrown down upon a percussion-cap by the action of the spring when the door or window is tried, or an attempt is made to open it. By Duncan E. McDonald, Springfield, Mass.

Improved Method of Turning Casks, etc., from Solid Pieces.—This improvement consists in cutting the bodies of barrels out of blocks of wood without injuring the cores, by means of longitudinal knives, connected with cross-heads, and fed by screws. By this improvement the bodies of barrels are turned in one piece from the solid blocks, whereby they can be produced in a superior manner than made from staves and put together. There is no wasting of material, since by putting on a sufficient number of tool-bearers and cutters, can be produced several barrels, or tubs, one within another, each of a smaller size, at one operation. After the bodies of the barrels are thus turned, and the chines cut, the heads are fitted in the usual manner. By James P. Osborn, Staunton, N. J.

Poisonous Colored Confectionery.—The *Lancet* commissioners, in reporting the result of their investigations respecting colored confectionery, express their surprise at the extent to which deadly and virulent poisons are daily made use of by the manufacturers of those articles. One hundred and one samples were analyzed; and of the yellows, seventy contained chromate of lead and colored gamboge; seventy-nine of the reds contained cochineal, red lead, and bi-sulphuret of mercury; eight of the browns contained ferruginous earths, either vandyke-brown, umber, or sienna; two of the purples contained Prussian-blue and cochineal; thirty-eight of the blues contained indigo, Prussian-blue, Antwerp-blue, and a sulphuret of sodium or aluminum; nineteen of the greens contained Brunswick-greens, consisting of a mixture of chromate of lead and Prussian-blue, verditer or carbonate of copper, Scheele's green or arsenite of copper. The above colors were variously combined in different cases, three and even four poisons occurring in the same parcel of confectionery. In four of the samples the colors were painted on with white lead or carbonate of lead; thirteen of the samples were adulterated with hydrated sulphate of lime; seventeen samples were adulterated with wheat flour, three with potato flour, and one with arrowroot.

EDITORS' JOTTINGS AND MECHANICAL RECORD.

MUSICAL—GRISI AND MARIO.—"The Queen of Song!" this has been long applied to the great artiste whose name we have here recorded, by the most competent judges in the world. Who shall gainsay it? By the same decree, Mario has been pronounced her most fit associate. They have now come into our community, and our wiseacres can see in them a host of imperfections, which, if they exist as represented, reduce them at least to second-rate performers. If they do not mean this, why do they expend so much *learning* in describing defects? It is admitted that they must have been great once, but they are now nearly forty years old! Well, reader, are you about forty years old, and do you begin to experience the tremors of age, and the weaknesses and infirmities of threescore and ten years? We have always heard that this was just the period of a man's maturity. But let this pass. Some men do begin to fade quite early. Probably these artistes have not the youthful elasticity and freshness of their earlier life, and probably this is all they have lost.

We have heard them in Norma, said to be Grisi's greatest character. Certainly she is a great actress. For queenly dignity, for deep, hearty passion, for intense emotion, most naturally represented, we have never listened to any scene to compare with several in this remarkable performance. Grisi is by far the best tragic actress we have ever seen.

But her music? Ask her world-wide reputation—her reputation of the present and the recent past; and if the question is repeated, we should be inclined to inquire, What do you think of the poetic merits of Homer's Iliad or Paradise Lost? The merits of these may as well be questioned as of the other. But wherein does her merit consist? This is a fair question, but not always easy to answer. We answer, partially, as follows: Sometimes it consists in a peculiar combination, rather than in any given particular. But she has a voice of great compass, remarkable cultivation, and more than ordinary power. She occasionally exhibits far more of this last quality than she does in her current style. Her trill is faultless, her soft notes are clear and distinct as those of a flute. We have heard, perhaps from more than one artiste, a note more perfect in itself than hers. Perhaps, as was said of Jenny Lind, the first few notes may disappoint you. But for efficiency—taking the singing and the acting in high tragedy, as one of our dailies has it, "she is incomparable." We have had nothing like it in this country.

Mario is quite competent to be her associate. His voice possesses wonderful compass, is under perfect cultivation, of excellent tone, with remarkable power, in occasional passages, and withal, he is a fair actor.

In person both are above the usual height, both well formed, of good features and expression, and very graceful in manner. Nothing like stiffness or formality appears in either.

During the performance of Norma, the audience were more completely under the control of the stage than we have ever before witnessed. We do not remember the occasion when four or five thousand persons were held so long in such perfect stillness, as during those three and a half hours.

The minor parts are well sustained. Susini, the base, is a capital voice, and discourses capital music. Miss Donovan, (Adalgisa,) is quite an accomplished performer. The chorus is good, better than we have often heard. The orchestra, led by Arditi, is very creditable.

It should be borne in mind that Castle Garden is a horrible place for musical effect. Its huge dimensions, numerous recesses, deep gallery, and perhaps the nature of its walls, combine to test the voice and instruments to the greatest extent. Their powers are now (in October) to be tested in the new Opera House, in Fourteenth street.

BUTTER FOR SALE.—In one week, ending Sept. 15th, there arrived in Boston by railroads, 856 tons of butter.

THE NEW ORGAN AT THE TREMONT TEMPLE.—All good works of art deserve a careful notice, and hence we give place to the following from the *Boston Traveller:*

"The new organ in the Tremont Temple was exhibited last evening, to the evident satisfaction of a large audience. It is from the manufactory of Messrs. E. & G. G. Hook, of this city, and is much the largest and most comprehensive organ ever built in this country, being, we believe, nearly as large as the celebrated organ at Birmingham. It consists of four complete manuals, extending from CC to A in alt., and an *independent pedal organ*, from CCC to D. It fills a space at one end of the hall, 50 feet in height and 50 feet in width, being concealed from view by an open-work screen. There are 15 stops in the great organ, 15 in the swell, 10 in the choir, 16 in the pedal, 6 in the solo, and 14 couplers, making, in all, 70 registers, 56 of which are *sounding stops*. This, we believe, is 12 more than are in any other organ in America. As far as we are enabled to judge from last evening's observation, the *voicing* of the pipes and reeds throughout the instrument is remarkably good, and the stops seem to *blend* very finely, no single one being too prominent. The *swell organ* is exceedingly effective; we rarely have heard such *crescendos* and *diminuendos*. The distinguishing features of this organ may be mentioned in a few words, as follows: 1. Its unusual *size*. 2. Its *independent pedal organ*, which is decidedly the largest and most complete in America, and is probably surpassed by few, if any, in Europe. 3. Its *solo-manual*, which is very rare in any country. 4. The very large and unusual number of couplers. We think this instrument will, in some respects, compare favorably with the large organs of England and the Continent. The *mixed* and *reed* stops throughout are very brilliant; but, as is the case in most American organs, the *diapasons*, which are by far the most important stops of an organ, and which form the *foundation*, as it were, of the whole instrument, are *thin*, and will bear no comparison to the deep-toned diapasons of European organs. We imagine that this general inferiority of American diapasons comes from the inferior metal used. People will not pay enough to enable builders to use the proper kind. All things considered, we think the Messrs. Hook may justly congratulate themselves on having produced an organ that will compare *well* with any in the country. Many distinguished organists from this and neighboring cities performed upon the organ last evening, but as their object was principally to show the *organ*, and not *themselves*, we will not attempt to criticise them individually. We can not help remarking, however, *en passant*, that one can not be too severely censured for perverting this most noble of all musical instruments with such melodies as 'My lodging is on the cold ground,' and others which were introduced last evening. Mr. Zundel, of New-York, can always be relied upon. He gave us some variations by Rink, and a fugue by Bach, in true organ style. Mr. Wilcox is perfectly at home in *showing off* an organ, and he never did it better than last evening."

CLOCK MANUFACTURES.—The *New-York Tribune*, in speaking of the latest Yankee clock ingenuity, says that it has seen one just manufactured, that measures time as the hours are counted in Japan, the hands making a diurnal revolution in twelve Chinese hours. From it we gather, also, the following interesting statistics:

Mayor Jerome, of New-Haven, has been successful in securing a ten per cent reduction of duty on American clocks shipped to England.

The superior beauty and cheapness of the American clocks has almost annihilated the German clock trade with England. The town of Bristol, in this State, has 14 clock factories, employs 440 hands, using $334,000 in capital, producing 201,000 finished clocks.

Plymouth, too, has three factories, employs 175 hands, using $150,000 in capital, producing 70,000 clocks.

Litchfield, also, employs 80 hands; capital, $50,000; produce, 3000 clocks.

Ansonia has two factories, employs 140 hands, using $182,000 capital, producing 102,000 clocks.

Southington has two factories, employs 45 hands, using $42,000 capital, producing 14,000 clocks.

Winsted has one factory, employs 40 hands, using $36,000, producing 80,000 clocks.

New-Haven has three factories, employs 405 hands, using $258,000, producing 674,000 clocks.

Total number of hands employed in clock-making in the State, 1279. Total capital, $1,002,000. Total number of clocks, 794,000 per year.

New-York city furnishes about one fourth as many clocks in a year as Connecticut does, and their annual value is $1,500,000.

MACHINERY IN FARMING: ITS NECESSITY.—It is not enough that farmers avail themselves of all the advantages which chemistry affords in its application to their art; it is not enough that they learn how to save as much as possible of the manures made on their premises, and the best methods of applying these and also purchased specific manures; it is not enough that they know at what seasons and to what depths their soils should be cultivated. They must perform as many of the operations of farming by machinery as machinery can be made to perform to advantage.

There is no other way in which agriculture can keep pace in respectability, pleasure, and profit with the other arts. Without this expedient it will be outstripped by them, and sink steadily in comparative rank.

By machinery, as we use the word here, we mean all mechanical contrivances which can be substituted for manual labor, and combined with manual labor, so as greatly to increase its productiveness.

And the policy which we recommend includes also animal labor as a substitute for human labor, and as a more powerful coöperator with it.

So far as a horse or an ox can be made to do the work of five men, the horse or the ox earns the net product of five men's labor for the employer. If one man cultivates as much corn, and cultivates it as well with one horse, attached to a cultivator, and one man, as his neighbor cultivates with ten hoes in the hands of ten men, it is easy to see which of the two is travelling the faster on the road to wealth.

So in cutting grass, in planting and harvesting corn, and in various other operations of the farm, machines can do the work for a small per centage of the cost of manual labor.

We do not mean that every machine which is invented and offered to the farmers for sale should be purchased by them. Not every attempt to substitute mechanical labor for manual is successful. The large majority of inventions are in some way defective. But in every case where it has been clearly ascertained that the thing is actually done, that a machine has been made, which, at a much smaller cost, will do the work which you are now doing with human hands, buy the machine if you can; and if you have not the means, get them as soon as possible.

It is not a matter of option with farmers whether they will do this or not. To succeed, they have got to do it otherwise it is impossible for them to compete with those who do employ machinery. It is like a man contending single-handed against a thousand, and every one his equal.—*People's Journal.*

HAMPTON'S PEACH.—This new peach was produced in Hardin county, Ohio, from a stone of the Morris-white Rareripe, purchased in New-York city sixteen years ago. The stone did not germinate until the second year, when the produce was a tree of uncommon vigor. It was several years in coming into bearing, but has not disappointed expectations since that period. The fruit is of a very large size. Some specimens have measured eleven and three quarter inches in circumference. It parts freely from its drab stone. In quality it is of the very finest, being very sweet and rich. The time of maturity is the first of September, and ripens gradually for two weeks. The tree is of great vigor, and before it suffered severely (a few years since) from a sleet-storm, the extent of its branches exceeded 29 feet in diameter, the circumference of its body 80 inches, and some of the annual rings exposed by this injury were near an inch in width. It stands in an uncultivated soil. The blossoms of this fruit are small and pale, the leaves finely serrated.

RECIPROCITY TREATY.—The Washington *Union* contains the President's proclamation announcing the ratification of the Canadian Reciprocity Treaty, under which the following articles are admitted from the British Provinces free of all duty:

Grain, flour, and breadstuffs, of all kinds.
Animals of all kinds.
Fresh-smoked, and salted meats.
Cotton-wool, seeds, and vegetables.
Undried fruits, dried fruits.
Fish of all kinds.
Products of fish, and of all other creatures living in the water.
Poultry, eggs.
Hides, furs, skins, or tails undressed.
Stone or marble in its crude or unwrought state
Slate.
Butter, cheese, tallow.
Lard, horns, manures.
Ores of metal, of all kinds.
Coal.
Pitch, tar, turpentine, ashes.
Timber and lumber, of all kinds, round, hewed, and sawed, unmanufactured in whole or in part.
Firewood.
Plants, shrubs, and trees.
Pelts, wool.
Fish-oil.
Rice, broom-corn, and bark.
Gypsum, ground or unground.
Hewn, or wrought, or unwrought burr or grindstones.
Dyestuffs.
Flax, hemp, and tow, unmanufactured.
Unmanufactured tobacco.
Rags.

STATISTICS OF TRADE.—What will our political financiers say of the following facts, which are stated in the journals of the day?

The supply of gold received from California has been inadequate to supply the drain made by the demands of our foreign trade. The shipment of specie from the United States to foreign countries, from the 1st of January to the 2d of September of this year, has been about $36,000,000.

While this drain of specie is going on with such drastic force, the official statements show that the foreign imports at the port of New-York for the month of August of this year exceed the imports for the same month of last year about $3,000,000.

The quantities of goods thrown upon the New-York market during the month of August of the past four years were as follows:

1851,	$6,783,216
1852,	9,684,591
1853,	11,668,731
1854,	14,194,646

It must be manifest to every rational mind, that the increasing population and wants, wealth, and ability of the country, do not require any such rapid increase in the supply of foreign goods.

IRON FOUNDRIES OF PITTSBURG.—There are now in Pittsburg thirty-eight iron foundries, of which nine are almost exclusively employed in the manufacture of steam-engines, and twenty-nine in the manufacture of various kinds of hollow-ware, machinery, etc. The foundries which are employed in the manufacture of steam-engines consume yearly 3200 tons of wrought-iron, 9200 of pig-iron, employ 640 men, and produce 120 steam-engines every year. Their net capital is $540,000.

GREATEST STEAMER IN THE WORLD.—The immense screw and paddle steamer, building by Scott Russell, at Millwall, England, for the Eastern Steam Navigation Company, is to be completed in twelve months. Her keel has been laid down, and several of her bulkheads, or compartments, are raised, and the works are proceeding with energy and expedition. A railroad has been laid down the entire length of her way, to facilitate the conveyance of the materials from the factory to the different parts of the vessel. The exact dimensions of the ship are as follows: Tonnage, builder's measurement, 22,000 tons; tonnage burthen, 10,000 tons; extreme length, 680 feet; extreme breadth, 83 feet; extreme depth, 58 feet; power of engines, (screw and paddle,) 2600 horse. Her engines are in the course of construction, and will be fitted in the vessel before she is floated off. The hull will be entirely of iron, and of more than usual strength, the magnitude of her size enabling Mr. Brunell, the architect, to introduce many precautionary measures conducive to support and security. From her keel up to six feet above the water-line is double, of a cellular construction. The upper deck will also be strengthened on the same principle, and will form a complete beam, similar to the tube of the Britannia Bridge, so that any external injury will not affect the tightness or the safety of the ship. She is divided into ten separate water-tight compartments, each being sixty feet in length, enabling her to take out sufficient fuel for a voyage to Australia and back to England without stopping.

INTERNAL IMPROVEMENT CONVENTION AT NORFOLK.—We are glad to be able to remind our Virginia readers of the great Internal Improvement Convention to be held in Norfolk, on Wednesday, the 8th of November next. The objects of that Convention are set forth in a series of resolutions adopted by a public meeting of the citizens of Norfolk in May last. The first resolution declares that the "cause of internal improvement in this State will be advanced by conference among its friends previous to the meeting of the next General Assembly, and that a full understanding of the course that should be pursued is necessary, to secure to the citizens of Virginia the trade within and beyond our borders, to which they are justly entitled." The second affirms, that "without concert of action and unanimity of purpose on our part, in regulating further appropriations to these works, we can not counteract the efforts that will be made to divert our trade to cities located in other States." The third resolution invites the "coöperation of all sections and parties interested in completing, with the least cost, and in the shortest time, our great lines of railway to the West, in such manner and direction as will inure to the benefit of the State, and to that of our own cities." In suggesting the holding of this Convention, the citizens of Norfolk take occasion to disclaim having any purposes to subserve that are not "common" to the other cities and towns of Virginia—having solely in view the establishment of a system that will be essentially "State" in its character and objects.

WATER IN FILLING UP DEEP BORE-HOLES IN BLASTING OPERATIONS.—In working the great deposit of magnetic iron ore which occurs under peculiar circumstances in the granite at Moravitza, in the Banat, it has been found necessary, in consequence of the hardness of the rock and ore, to use bore-holes from 2 to 2½ inches in diameter, and 36 to 40 inches deep. The packing of such holes with clay being a very tedious operation, Mr. A. Koszt endeavored to substitute water for the clay, with considerable success. One of Bickford's safety-fuses, which burns in water perfectly, is attached to the cartridge and fastened with thread; this cartridge is let down to the bottom of the whole, and about 1½ to 2 inches of clay firmly packed over it, the remainder of the bore, nearly to the top, being filled with water. In the case of very oblique bores, where the pressure of the water upon the bottom was small, he plugged up the orifice of the bore with a plug of wood, driven with considerable force into it, through a slit in which the fuse passed. More recently still he had used instead of a small quantity of clay first introduced, to keep the cartridge from becoming wet, a mixture of tar and pitch, which most effectually preserves the powder from damp. Great numbers of trials have convinced him that the blasts fired with this arrangement lose nothing in force, while there is a great saving of time and consequently of expense.

NEW CONTRIVANCE IN IRONING.—The heating of irons, as we are led to suppose, is often attended with great inconvenience. Sometimes they are too hot, sometimes too cold, sometimes they crock the muslins, etc., etc. A patent has been taken, in England, for heating them by steam. An elastic tube, of requisite length, is connected at one end with a steam-boiler, and at the other end, the iron being hollow, with the interior of the iron. Two tubes may be provided, so as to keep up a constant current of steam through the iron. Much time, now consumed in changing the irons, will be saved by this plan, and there may be also economy in the heating. A very small boiler, in summer, may be substituted for the kitchen grate, and in all cases an ordinary fire will be quite sufficient for keeping the irons hot.

Another advantage is obvious. To prevent an inconvenient degree of heat upon the hand, a double plate, with an air-chamber between, may be arranged above the steam-chamber, and, by the use of a non-conducting handle, all danger of this sort may be entirely obviated.

ENGINES OF THE FRENCH STEAMSHIP BRANDON.—An iron screw-ship has recently arrived at this port from Havre. Her engines are peculiarly constructed. She has two engines, with two steam cylinders for each. She has two tubular boilers of very small dimensions. One engine, a small high-pressure, communicates its steam to the second, which is twice as large. The crank-shaft of each engine acts directly, by gearing, upon the propeller-shaft. The wheels of the two engines are geared to the same pinion, and of course revolve in opposite directions. Both engines weigh but sixty tons, and consume but fifteen and a half tons of fuel per day. She made the passage in sixteen days. She was built on the Clyde.

SCIENCE TURNED PERVISH.—"An experiment has just been successfully made in France, of employing swallows to carry letters, as pigeons were used some years back."—*Exchange.*

"Foolish operation in these days of the lightning telegraph."—*Scientific American.*

Now, this remark of our neighbor seems to us the most foolish and unscientific that he could have made on the subject. Are not messages to be sent any where except where telegraphs will pay? This is only equalled by that other remark of his, that steam-carriages on common roads are not wanted in this day of railroads. According to this learned editor, all our business, financial and social, is to be done on railroads and by electric telegraphs. He is quite behind or outside the times.

GLASS GLOBES UNSUITABLE FOR FISH.—In the first place, the fish require abundance of air. Now, scarcely any other shape than a globular one contains so much water with so little exposure to the air. Fish, too, require shade, not when we choose to give it to them, but when they feel the want of it; and it need scarcely be observed that all day long a glass globe is in a blaze of light. Still more, the water in the globe must be daily changed, consequently the fish must be lifted out either by hand or a small net; and it is utterly impossible, however careful we may be, to handle or net these delicate little struggling creatures without injuring them, at one time or another.

LIQUID GLUE.—Take 1 kilogramme (or 2 lbs. 8 ozs. 3 dwts. 2 grs. Troy) of Cologne glue, and dissolve it in 1 quart of water in a glazed pot, over a gentle fire, or, better, in the sand-bath, stirring from time to time. When it is all melted, 200 grammes, (6¼ ozs. Troy,) of nitric acid, at 36°, are added, by small quantities at a time. Effervescence takes place, from the disengagement of hyponitric acid. When all the acid has been poured in, the vessel is removed from the fire, and allowed to cool. Glue thus prepared has been kept for upward of two years, in an uncorked bottle, without suffering any change. Liquid glue is very convenient in various chemical operations. Pieces of linen covered with it may be used as a luting for preserving certain cases. It is likewise very useful to cabinet-makers, carpenters, pasteboard-makers, and toy-makers, since it does not require heating.

MULE TRADE OF BOURBON COUNTY, KY.—The Paris (Ky.) *Citizen* gives some statistics of the mule trade of Bourbon county, which show a steady increase both in the demand for and value of these animals. In 1848, according to the assessor's books, there were in the county 1932 mules, valued at $41,348, or an average of $21.31 per head; in 1854, 7436, valued at $562,800, or $7570 per head. The principal markets are the Southern States, where they are used on cotton and sugar plantations. In Virginia they are used on the farm and the road. Baltimore furnishes a large market for the smaller animals, where they are shipped to the West-Indies, to pack coffee from the mountain-plantations. One dealer in Baltimore purchases annually 1000; and another in Richmond, Va., about double that number, one farmer in Bourbon county selling him every year between 500 and 800.

ENGRAVING ON GLASS.—Mr. I. W. Whipple has just patented in several countries, a new mode of engraving or printing on glass, which reproduces rapidly and cheaply upon the surface of glass vessels of any usual form, or even upon ordinary window-glass, any device, motto, landscape, or portrait which may be desired. Measures are in progress to establish a manufactory for the production of glassware thus ornamented. Ordinary glass goblets, whether cylindrical, conical, or hemispherical, are "printed" with equal facility, a goblet being finished complete in from three to ten minutes. It is estimated that one girl will be able to attend to four machines, thus engraving from two to seven dozen per hour.

THE FAIR IN PROVIDENCE.—The exercises of the annual Agricultural Fair commenced in Providence on Wednesday, Sept. 20, and, as we learn from the *Providence Journal*, attracted an immense concourse of people from the surrounding towns. Every thing went off well, and the agricultural part of the exhibition was never finer or more interesting. The chief attractions were a ploughing match, a drawing match, the cattle-show, and the parade of ox-teams. The horticultural department of the exhibition was large and beautiful, notwithstanding the effects of the drought were visible in the diminutive size of the fruit. The exhibition of woollen goods and cloths was more interesting than that of last year, and embraced many rich and elegant specimens of goods.

PERPETUAL MOTION.—Mr. James G. Hendrickson, of Freehold, Monmouth county, N. J., after forty-nine years of patient "whittling," has made a machine that will not only "go of itself," but will compel divers other bodies to which it is attached to go likewise; in short, it has power! "The success is in the direction in which so many have so long labored in vain, namely, by the use of arms and balls attached to a cylinder so as to keep the extra weight always on one side, and therefore to give the cylinder a constant inclination to turn round. The machine requires no starting; take away the blocks, and it goes off 'like a thing of life.' The model was in our office yesterday, and attached to some clock-work, which it turned without once stopping to breathe. We see no reason why it would not go until worn out."—*Journal of Commerce.*

PURIFYING GAS.—The Rev. W. R. Boudich, of Wakefield, England, has obtained a patent for purifying gas, by employing clayey earths, either alone or in combination with lime. The earths so employed are afterward used by farmers for manure. It is well known that aluminous earths possess the quality of absorbing and retaining ammonia; they therefore absorb the ammonia which is set free in the distillation of the coal of which the gas is made, and as ammonia is an excellent fertilizing agent, the products of the gas-works thus become serviceable for raising wheat and corn.

WHAT A MOWING-MACHINE CAN DO.—The *Springfield Republican* states that Captain Samuel Parsons, of Northampton, cut, made, and put into his barns, sixty-two loads of hay during the first week of July, commencing on the 3d, beside mowing for others to the amount of $40 in the same time. The whole was accomplished with what would be equivalent to the labor of one man for thirty-eight days. He mowed in one day, and in less than nine hours, eleven acres, producing from two to two and a half tons per acre.

RAILROAD SPEED.—The Great Western Express to Exeter, England, is made to go at the rate of sixty miles an hour, including stoppages. Supposing the locomotive which draws such a train to have driving-wheels seven feet in diameter, those wheels will revolve five times in a second; the valve moves and the steam escapes ten times in a second; but as there are two cylinders which act alternately, there are really twenty puffs or escapes of steam in a second. Such a locomotive speed is equal to nearly one fourth of that of a cannon-ball, and the momentum of a whole train, moving at such a speed, would be nearly equivalent to the aggregate force of a number of cannon-balls equal to one fourth the weight of the train.—*Banner of Industry.*

PEAT FOR FUEL.—The *Waterbury American* says that two beds of peat have recently been discovered about two miles from that city, and that two joint-stock companies have been formed, with abundant capital, for the purpose of supplying it as a fuel for market.

If the *American* gives this information as a sign of enterprise, we fear he is behind the times. Where we were brought up, men of very small capital do this very thing. Almost every family supplies at least their own wants, and many are ready to supply their neighbors.

KEEPING FLOWERS AND FRUIT IN A FRESH STATE.—A new process has been discovered for keeping flowers and fruit from decay. This is the process:

Dissolve gum arabic in soft water to the exact point of saturation, and then take a full-blown rose and dip it into the water, and, as soon as the gum is dry, dip again and again, stem and all, and then put it away under glass, or where it will not be touched, and the flowers will remain perfect for a long time.

Fruit treated in the same way will not decay soon, because it is shut up from the atmosphere.

It is almost needless to say that this is a very good way to prepare eggs for long keeping.

Grafts dipped in the gum solution may be carried to California safely.

CURIOUS ENGLISH STATISTICS.—It appears by the returns, that there are in England 3,891,271 integral families, and 1,178,559 which have prematurely lost the husband or wife. The number of widows is 795,590, of widowers only 382,969. Between the ages of 25–30, two per cent of the women are widows; 30–35, four per cent; 35–40, seven per cent; 40–45, ten per cent. At 65, the number of widows exceeds the number of wives. At the age of 80 and upward, of 100 women, 75 are widows, 13 are unmarried, and 12 wives. Of every 100 men of 20 years or upward, 31 are bachelors; and of every 100 women of 20 years or upward, 29 are spinsters. Not more than 20 in 100 families are childless.

ANOTHER WONDERFUL MATHEMATICIAN.—A girl between eight and nine years of age, living at Ayrshire, and attending the Hastings school, is a perfect wonder. She has studied arithmetic but a year, but can tell in a few moments, by mental calculation, the number of seconds in any number of years, 60, 80, or 100, etc., multiply or divide by two numbers, as 32, 68, etc., by short division. She multiplied 123456789 by 987654321, and gave the correct answer in less than a minute. She is the daughter of a shoemaker in Darvel.

WONDERFUL PATENT.—The *Scientific American* details seriously, as if in approval, of a "machine for sawing cord-wood," which consists of quite a system of mechanic contrivances, and fly-wheels, etc., all of which, having no power, are to be put in motion by the wood-sawyer, beside sawing the wood. The saw is a common wood-saw, sometimes called a bow or frame-saw. What does all this mean? Perhaps he was the patent-agent, and knows all about it. We should like to know what possible benefit it can be.

CLOTHING BUSINESS.—The clothing business of Boston amounts to twelve or fifteen million dollars annually. There are four houses which give employment, directly or indirectly, to about five thousand persons each, scattered throughout the New-England States, in most of which they have agencies.

Novel Smoothing-Irons.—Mr. John Kingsland, of Alleghany City, Pa., has patents for two smoothing-irons. One is self-heating, and has been already described in this journal. It is hollow, with a draft, for the purpose of burning charcoal. The other is also hollow, and is furnished with a piece of iron fitted to it, to be heated in the grate or elsewhere, and then inserted in its place. This heater is open at the centre, forming also a draft; so that placing it on a fire does not tend to put it out, but rather to increase its intensity, by forming a short chimney for the passage of its hot current. Both are well worth attention.

Breckenridge and Cannel Coal Company.—We learn that this company are progressing with their enterprise with extraordinary energy. Four hundred men are at work. The company have all the means on hand to complete the works, and it is confidently anticipated that they will be enabled to deliver coal by the first of December. The superiority of this coal, says an exchange, will bring it into general use at once.

The Crops in England and Ireland.—The late English papers all speak of fine weather and abundant harvests throughout the whole of that country. The corn and wheat especially are represented as unusually fine, and in many places the latter was being cut. Oats and hay, too, would yield largely, and the only complaint is of the potato-rot, but this is far from general or very serious.

Connecticut Wine.—Mr. Ansel Martin, of Norwich, Conn., has about five hundred gallons of wine, made from the native grape. He carries on the manufacture quite extensively, his presses and other apparatus being all of his own invention. He says there is no more need of importing wine than there is of importing cider, and that there might be an abundance of a splendid home article, if the farmers would only give some attention to the subject.

The Concord Grape.—E. W. Ball, Esq., of Concord, Mass., has originated, it is said, within a year or two, a new seedling-grape, which is highly spoken of. We have not seen it, and therefore can not judge of its merits. We should like to know more of it.

Kaolin.—A bed of this valuable clay was discovered in New-Jersey, at West-Milford, some time since, but its qualities were then unknown. It has recently been tested, and is found a valuable kaolin. It is of various colors, white, red, chocolate, etc.

Dr. William Terrill, of Sparta, has given to the Georgia State University at Athens, the munificent sum of $20,000, to endow a professorship of Agriculture. In pursuance of the donor's wishes, the Professor of Agriculture is to give a free course of lectures each year.

Erratum.—In our notice of Messrs. Woodward & Brown's manufactory of piano-fortes, we were made to say "a toning-machine," instead of "a boring-machine," as we intended.

Collectors Wanted—In all the States south and west of Ohio and Pennsylvania. Those of experience preferred, and unquestionable references required. Address, post-paid, or in person, at this office.

General Agency.—The publisher of *The Plough, the Loom, and the Anvil*, believing it in his power to be of essential service to the readers of that journal, in the purchase or sale of various articles, and the transaction of various kinds of business, would announce to them that he is ready to execute any such commission which he may receive, including the purchase of books of any description; implements connected with agricultural, manufacturing, or mechanical operations; artificial manures; farm and garden seeds, etc., etc. One of the gentlemen connected with the journal is a proficient in music, and experienced in the selection of piano-fortes, flutes, etc., and will execute orders in that department.

He will also act as agent in the purchase and sale of Real Estate.

☞ Particular attention to business connected with the Patent-Office.

Letters of inquiry on these matters will be promptly attended to.

NEW BOOKS.

THE PRACTICAL MECHANIC'S JOURNAL.

Nos. 4 and 5 of Vol. 7 are received, and fully sustain us in the commendation we gave two months since of the work, in a notice of the previous numbers. It is a capital work, superior to any thing we know of in this country. To this we are indebted for our account of "recent English patents," in the preceding pages. It is published monthly in Glasgow. The American agents are Stringer & Townsend, 222 Broadway. Price $3 a year.

THE TENT AND THE ALTAR; or, Sketches from Patriarchal Life. By Rev. JOHN CUMMING, D.D., F.R.S.E., etc. Boston: John P. Jewett & Co. 1854.

IN this excellent volume twenty-two topics are presented, in separate chapters, illustrating the different phases of religion in the time of the patriarchs. The scenes, each of them, is portrayed with a very powerful pen. "Each patriarch lived for us. His voice is borne on the winds and waves of time to us." This book is one of the prominent instrumentalities by which this is accomplished. Few writers have done more to impart a thrilling interest to these lessons than Dr. Cumming.

VOICES OF THE DAY. By Rev. JOHN CUMMING, D.D., etc. Boston: John P. Jewett & Co. 1854.

THIS is intended as a companion of "The Voices of the Night," (which we have not seen,) and relates to the future, "the 'night' being far spent and the 'day' at hand." The first chapter is "The dawn of day," and the last, the 16th, "The coming of Elijah." The wonderful power of the writer is exhibited in this as in the volumes we have previously noticed. He is, beyond dispute, *the* religious author, in this department of literature, of the present day.

ARITHMETICAL ANALYSIS; or, Higher Mental Arithmetic for Advanced Classes. By JAMES B. THOMPSON, LL.D. New-York: Ivison & Phinney. 1854.

DR. THOMPSON is the author of several school books of a high order, but we doubt whether any man can do a more useful service, in this sphere, than to prepare a good mental arithmetic. Exercises of this kind do more to direct the mind and bring out principles even than geometry as it was taught in our colleges twenty or thirty years ago. This service he has done in this little book. The plan is well arranged, well explained and illustrated, and the whole forms a foundation for further developments and higher processes which is invaluable.

GRECIAN AND ROMAN MYTHOLOGY. By M. A. DWIGHT. 2d abridged edition. New-York: A. S. Barnes & Co. 1854. 12mo, 314 pp.

THIS work fills a blank space which has proved very inconvenient, especially to readers of the classics. It contains 34 engraved illustrations. The author has done his work in a very able manner. The introduction is also valuable, containing an account of the origin of mythology, and its progress onward toward the true historic period. For schools and families this work will be of especial value. No other, within our knowledge, supplies its place.

WM. HALL & SON.—Reader, can you "perform" *Old Hundred?* Are you very sure? Please try a copy, arranged by W. V. WALLACE, and "ten to one" you will find your match. But it is perfectly beautiful, and therefore will pay for the labor bestowed on it.

La Belle Brunette Polka, brillante, by JOHN PRIDHAM; *Youth is life's time of May*, a romance, by HENRY C. WATSON; and *Our Wild Woodland Home*, vocal duett, written by HAROURT RUSSELL, composed by LOUIS SPOHR, and very beautiful; all are well worth your attention.

List of Patents Issued

FROM AUGUST 8 TO SEPT. 5.

Robert Arthur, Washington, improvement in closing the mouths of bottles, etc., air-tight.

John A. Bradshaw, Lowell, improvement in machine for pegging boots and shoes.

Wm. Brooke, Jersey City, improvement in gas-moulds.

John H. Cahill, Philadelphia, improvement in hot-air ranges and side-ovens.

Mathias P. Coons, Brooklyn, improvement in railroad car brakes.

Aaron D. Crane, Newark, N. J., improvement in machines for turning irregular forms.

D. M. Cummings, Enfield, N. H., improvement in rakes.

B. Franklin Day, Philadelphia, improved hand-press.

Cook Darling, Utica, improved mode of securing hubs to axles.

Aaron L. Dennison, Roxbury, improvement in punches and dies for punching watch-hands.

Joshua Gibbs, Canton, Ohio, improvement in ploughs.

Joseph Harris, Jr., Boston, Mass., improvement in lamps.

Albert H. Judd, St. Louis, improved safety apparatus for steam-boilers.

J. L. Lord, Chester, Conn., improved grindstone-frame.

Thos. G. McLaughlin, Philadelphia, improvement in railroad car brakes.

Jacob Myers, Powhattan Point, Ohio, improvement in harrows.

Robert Neish, New-York, improvement in lime-kilns.

Andrew Patrick, Alleghany County, Md., improved mode of unloading coal and other cars.

Sylvester H. Roper, Worcester, improvement in sewing-machines.

Jacob C. Robie, Binghamton, improvement in turn-tables.

O. S. Reynolds, Dover, N. H., improvement in machines for cutting irregular forms.

Chas. G. Sargent, Lowell, improvement in machines for combing wool.

Geo. Spencer, Utica, improvement in railroad car windows.

Wm. A. Sweet, Pompey, N. Y., improvement in fire-arms.

J. S. White and L. P. Wait, Waterloo, S. C., improvement in seed-planter.

Moses D. Wells, Morgantown, Va., improvement in horse-rakes.

Timothy W. Webb, Jersey City, improvement in insulators for lightning-rods.

W. A. White, Roxbury, improved process of printing long-napped fabrics.

A. S. Wright, San Francisco, Cal., improvement in gold-amalgamator.

Wm. Kidder, Newburyport, assignor to Wm. Kidder and Nehemiah Hunt, Boston, improvement in machines for pegging boots and shoes.

Henry H. Beach, Chicago, improvement in winnowers.

Wm. D. Andrews, New-York, improved centrifugal pump.

Nathaniel A. Boynton, New-York, improvement in hot-air furnaces.

Richard C. Bristol, China, Mich., improvement in rotary-engines.

Benj. Bridendolph, Clearspring, Md., improvement in hominy-mills.

Absalom S. Earle, Franklin, N.Y., improvement in straw-cutters.

Wm. M. Ellis, Washington, D. C., improved arrangement of the steam-engine.

Wm. Z. Hatcher, Philadelphia, improved stop and waste-cocks.

Levi Haywood, Joseph L. Ross, and Jas. K. Otis, Boston, improvement in portable bureaus.

J. Burrows Hyde, New-York, improvement in apparatus for coating telegraph-wires.

Bernard Hughes, Rochester, improvement in actuating engines by bi-sulphate of carbon.

Geo. Jackson, Cohoes, improvement in knitting-machines.

Abel F. Lewis, Shopiere, Wis., improvement in floating-drags, or anchors.

Robert Marquis, Xenia, Ohio, apparatus for balancing and hoisting sashes.

Elbridge Marshall, Blinton, N. J., improvement in manure-spreaders.

Henry Mellish, Walpole, N. H., improvement in grain-mills.

Julius A. Pease, New-York, improved diaphragm pump.

Wm. D. Porter, New-York, improvements in wood gas generators.

Henry Richardson, Sheldon Morris, Jr., and Bennet C. Peroy, Litchfield, Ct., improvement in folding umbrellas.

Artemus Rogers, Painsville, Ohio, improved instrument for manufacturing door-knobs.

Charles M. Alburger, Philadelphia, improved pavement-washer, hose-hydrant, and hitching-post.

Thomas Crosely, Boston, improvement in manufacturing two-ply carpets.

Jos. Hill, Skaneateles, improved daguerreotype plate holder.

Jos. C. Jenkins, Bealsville, Ohio, improvement in tuning forks.

Abner White Jones, New-York, improved means of preventing the explosion of boilers.

Dustin F. Mellin, Wentworth, N. H., machine for sawing clapboards, etc.

Wm. O. Rust, Great Falls, N. H., improved saw-set.

Hugh Sangster, Buffalo, improvement in securing glasses in lanterns.

Edmund Shaw, East-Abington, Mass., improvement in sewing-machines.

Halcyon Skinner and Wm. Greenhalgh, West-Farms, N. Y., improved carpenters' guage.

Robert Spencer, Southport, Ct., improvement in harness saddle-trees.

Alfred A. Stara, New-York, catamenial supporters.

David Swartz and Samuel Swartz, Tomsbrook, Va., improvement in fastening ploughs.

Robert Spencer, New-York, improvement in harness-saddles.

Paul Stillman, New-York, improvement in counting-machines.

Francis C. Treadwell, New-York, improvement in ovens.

Abner Whitely, Springfield, Ohio, improvement in track-clearers to grass-harvesters.

Philander Wilbar, Milan, Ohio, improvement in cheese-presses.

Melvin Shaw, East-Abington, Mass., assignor to Melvin Shaw and Daniel Gage Wheeler, of East-Abington aforesaid, improvement in clamps for sewing-machines.

Solomon S. Gray, South-Boston, assignor to S. S. Gray and S. A. Woods, of South-Boston aforesaid, for improved machine for planing lumber "out of wind."

Daniel Treadwell, Cambridge, assignor to Herbert H. and Frederick H. Stimpson, of Boston, improvement in operating furnaces.

Thomas W. Harvey, deceased, late of New-York, administrator and assignor to the Harvey Steel and Iron Company, for improvement in furnace for manufacturing wrought-iron directly from the ore.

James A. Brazier, Canton, Mass., assignor to Alfred B. Ely, of Boston, improvement in cog-gearing.

M. H. Merriam, Chelsea, Mass., and William W. Nichols, Boston, assignors to W. W. Nichols & Co., of Boston aforesaid, for improved tool-rest for turning-lathes.

Benj. F. Graves, of Boston, assignor to C. Knowlton, of Boston aforesaid, improved tool for boring recesses for castors, etc.

Sidney S. Turner, Westborough, Mass., assignor to Elmer Townsend, of Boston, improvement in sewing-machines.

Jacob Senneff, Philadelphia, improvement in machines for rolling shoulders on axles.

Wm. Van Arden, Poughkeepsie, improvement in machines for rolling shoulders on axles.

Robert Ross, Philadelphia, improved steam-valves.

Robert M. Abbe, Thompsonville, Ct., improvement in hog-pens.

Wm. T. Bazemore, Bibb County, Ga., improvement in cultivators.

Wm. Biddle, Lafayette, Ind., improvement in washing-machines.

Gardiner A. Bruce, Mechanicsburg, Ill., improvement in maize-harvesters.

Lebbeus Brooks, Great Falls, N. H., improvement in spirit-levels.

E. W. Bullard, Hardwick, Mass., improved window-blind holder.

Julius C. Dickey, Sandy Hill, N. Y., improvement in fastening skirts to saddletrees.

Isaac B. Dudrey, Athens, Ohio, stave-machine.

Isaac B. Dudrey, Athens, Ohio, improved stave-machine.

O. G. Ewings, Heart Prairie, Wis., improvement in ploughs.

Jos. W. Fawkes, Christiana, Pa., improvement in manure and lime-spreaders.

Richard Fanning, Clarkfield, Ohio, improved method of guiding cross-cut saws.

Joseph F. Flanders and Jeremiah A. Marden, Newburyport, Mass., improvements in leather-splitting machines.

J. T. Forbes, Coburg, Canada West, improvement in bedsteads for invalids. Patented in Canada, Feb. 2, 1854.

Nelson Gates, Cincinnati, Ohio, improvement in cast-hinges.

John Gleason, Northfield, Vt., improvement in slide-valves for steam-engines.

Daniel Hayward, Providence, R. I., improvement in manufacture of India-rubber.

Sam'l M. Hackman, Toursbrook, Va., improvement in seed-planters.

Abraham R. Hurst, Harrisburg, Pa., improvement in manure-excavators.

John H. King, Jr., Georgetown, D. C., improvement in seed-planters.

C. R. Landman, New-York, improvement in lamp-fillers.

Ezra Hommedieu, Chester, Ct., improvement in dies for making augers.

John G. McCauley, Stonebridge, Va., improvement in harrows.

John B. Nichols, Lynn, Mass., improvement in binding folder.

Whitman Price, Goldsborough, N. C., improvement in ploughs for planting potatoes.

Wm. Redick, Uniontown, Pa., improvement in seed-planters.

Titus H. Russell, Taftsville, Vt., improved sawmill dogs.

R. L. Sibbet, Shippensburg, Pa., improved method of tennoning spokes.

Andrew J. Smith, Piqua, Ohio, improvement in corn-shellers.

Jos. C. Strode, Westchester, Pa., puppet-valves for hydraulic-rams.

Joshua Stevens, Chicopee Falls, Mass., improvement in chairs for exercising.

Elisha Waters, Troy, N. Y., improvement in breast-cups.

Noah Warlick, Lafayette, Ala., improved horse-shoeing apparatus.

Chas. P. S. Wardwell, Lake Village, N. H., improved machine for cutting tennons.

Joseph D. West, New-York, improved hydraulic ram.

Jesse Whitehead, Manchester, Va., improvement in counter twist-speeders.

John Woolton, Boonton, N. J., improvement in nail-machines.

Dan'l Halliday, Ellington, Ct., improved governor for windmills.

Thos. C. Vice, Rochester, N. Y., method of furling and unfurling windmill sails.

Sidney S. Turner, Westborough, Mass., assignor to Elmer Townsend, Boston, improvement in sewing-machines.

Philemon A. Morley, Brooklyn, N. Y., assignor to James Bright, of Brooklyn aforesaid, improvement in glass lanterns.

Dexter H. Chamberlain, Boston, Mass., assignor to Wm. H. Meshural, New-Haven, Ct., improvement in lard-lamps.

James E. Crowell, Salem, Mass., assignor to himself, Edmund Smith, and Charles T. Stickney, of Salem aforesaid, machine for dressing ship-timbers.

Thomas Worrall, Mount Holly, N. Y., assignor to Mifflin Paul, of Mount Holly aforesaid, multiform moulding-plane.

Wilson Ager, Rohrsburg, Pa., improved millstone dress for cleaning grain.

Wm. B. Akins, Ithaca, improvement in flouse-bolt.

Benj. Bray, Salem, Mass., improvement in spring-rollers for window-curtains, etc.

Chas. Claremi, New-York, improvement in attaching pulleys to shafts.

John Clark, Washington, D. C., improvement in chimney-caps.

Chas. H. Dana, West-Lebanon, N. H., improvement in seed-planters.

Louis Daser, Washington, D.C., improvement in seed-planters.

Augustus M. Eastman, New-York, improvement in making ribbon of strips of cloth.

Wm. H. Foster, Portsmouth, N. H., improved arrangement for reefing and furling top-sails from the deck of the vessel.

Jonathan G. Gine, South-Thomaston, Me., improvement in machinery for worming rigging.

Geo. W. Griswold, Carbondale, improved portable door-fastener.

John Hinde, Schenectady, improvement in machine for breaking flax and hemp.

Moses G. Hubbard, New-York, improved method of hanging plane-stocks.

Adoniram Kendall, Cleveland, improved riving-machine.

Joseph Morse, Washington, D. C., improved driving-wheels of locomotive for ascending inclined planes.

Thos. M. Powell, Baltimore, improvement in ice-cream freezers.

Chas. Rowland, Belleville, Ill., improvement in tables.

Bradford A. Rugg and Ezra H. Benjamin, Oak Hill, N. Y., improved machine for feeding paper to printing-presses.

Daniel Warner, Jr., South-Hadley, Mass., improvement in machinery for dressing flax.

George L. Wild, Baltimore, improvement in stringed musical instruments.

Henry L. Clark, La Porte, Ind., improvement in doors for baggage-cars.

Leroy S. White, Chicopee, assignor to himself, Lewis White, of Hartford, Lyman White, of Springfield, and Augustus G. Stevens, of Manchester, N. H., improvement in railway-lamps.

Alex. H. Brown, Georgetown, D. C., improvement in brick-presses.

Sci 120.100

No. 5. Nov., 1854. Vol. 7.

HARVARD COLLEGE

THE PLOUGH

THE LOOM AND THE ANVIL.

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WM. WHITE SMITH, of Philadelphia, is our Agent for Pennsylvania. S. D. ALLEN is General Agent for this Journal.

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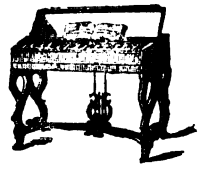

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Vol. VII. NOVEMBER, 1854. No. 5.

VEGETABLE PHYSIOLOGY.

SOURCE OF THE NITROGEN ABSORBED BY PLANTS.

In our last number we alluded incidentally to the question which has been discussed so earnestly, Whence do plants obtain their nitrogen? Does the atmosphere yield its nitrogen to plants, or do they obtain it by the decomposition of ammonia?

This question has excited much attention in France, and has been the occasion not only of most laborious experiments, but also of very learned discussions. Among those who have especially devoted themselves to the consideration of this subject are Messrs. Boussingault and Ville, who arranged themselves on opposite sides of the question. At a session of the Academy of Arts and Sciences, in March last, M. Boussingault presented a memoir, containing the full details of numerous experiments, very carefully conducted, and which led him to conclude that the atmosphere does not furnish nitrogen to plants. This memoir we should be very glad to present to our readers, but while it occupies 26 pages, of quarto form, in the *Comptes Rendus* of the Society already named, it consists almost exclusively of the practical details of the experiments. But we have translated such portions of the memoir as are necessary for a full understanding of the essay, and the conclusions he reached, omitting only the description of the details of the several experiments. The learned writer begins and proceeds as follows:

"The question whether vegetables fix in their organism the azote which is found in the atmosphere, in a gaseous state, is not only interesting in a physiological view, but its solution would throw light upon the theory of the fertility of soils. In fact, if gaseous azote is not assimilable, if its influence is only to temper, in some sort, the action of oxygen gas with which it is mixed, we discover the value of organic matters in manures, which, by their spontaneous decomposition, furnish to plants the elements of azotised matters which they elaborate. If, on the contrary, azote is fixed during the process of vegetation, if they thus become an integrant part of the vegetable, we are naturally led to this inference, that the greater part of the fertilizing properties of manures resides in their mineral substances, in the phosphates, the carbonate, earthy, and alkaline matters, which they always contain in notable quantities, for the azotic element would be certainly furnished by the atmospheric air.

It is true, that in former times, when reliance was placed upon eudiometric methods, (apparatus for testing the purity of the air,) it was supposed that a manifest absorption of azote could be discovered during the development of a

plant; but more recently, Theodore de Saussure, who employed more exact methods, did not succeed in verifying such absorption; but, on the contrary, the researches of this eminent observer tended to convince him that there was a faint exhalation of this gas, and if there remains any doubt in respect to this phenomenon, it is because the manometric processes (apparatus testing the density, etc., of the air) adopted by Saussure, do not give well-determined results, as a change quite considerable may occur, either in the volume or in the composition of the atmosphere in which the plant has remained. These processes amply establish the fact, for example, of the decomposition of carbonic acid by the green parts of vegetables, because the action of the solar rays is made immediately obvious by the appearance of oxygen gas. The manometric method is very often unsatisfactory when the point is to decide whether some cubic centimetres of gas have been absorbed or exhaled by a plant confined in certain litres of air. But, when after the lapse of several years, after having reëxamined the facts favorable or contrary to the idea that vegetables appropriate azote from the atmosphere, I find that the question may be considered as unsettled, I deem it proper to pursue this inquiry, in the hope of resolving it in a manner entirely different from that in which it has heretofore been treated. I compare the composition of seeds with the composition of crops obtained independently of every thing but the sun and the air. The plant develops itself in a soil thoroughly calcined, to destroy the least trace of organic matter, and watered with distilled water. It then appears that the vegetable has acquired a portion of carbon, of hydrogen, of oxygen, and of azote, during the course of its development. See, under the report of the azote, the results obtained in 1836 and 1837:

Plants cultivated.	*Duration of culture.*	*Weight of the grain.*	*Weight of the crop.*	*Azote in grain.*	*Azote in crop.*	*Gain or loss of azote.*
Clover,	2 months,	1·576 grs.	3·220 grs.	0·110 grs.	0·120 grs.	+0·010
Clover,	3 "	1·632	6·288	0·114	0·156	+0·042
Wheat,	2 "	1·526	2·300	0·044	0·040	—0·003
Wheat,	3 "	2·018	4·260	0·057	0·060	+0·003
Peas,	3 "	1·211	4·990	0·047	0·100	+0·053

This shows, 1st, that in a soil absolutely deprived of manure of organic origin, and under the influence of the sun and water only, the clover and the peas acquired, independently of carbon, of hydrogen, and of oxygen, a quantity of azote appreciable by analysis. 2. That the wheat, cultivated under the same conditions, took from the air and the water carbon, hydrogen, and oxygen, but that the analysis could not discover a gain or loss of azote, without which one might, however, definitively conclude that the wheat has not the power to fix a certain quantity of azote.* As to the origin of azote assimilated under these circumstances, the analysis was powerless to determine, since this element might enter directly into the organism of plants, or else, as Theodore de Saussure thought, it might be derived from the ammoniacal vapors of which the atmosphere is never entirely deprived, although it contains them only in very minute quantities. So, in 1838, the result of the experiments which I made reduced the question to this: Does the azote, assimilated by a plant cultivated in the open air, in a soil deprived of organic matter, come from the nitrogen gas, (of the air,) or from the ammonia? I add, that more recently, the experiments that have been tried have led to contradictory conclusions.

If it is considered how feeble is the proportion of azotised substances elaborated by a plant placed in a sterile soil, although the culture of the vegetable

* *Annales de Chimie et de Physique*, 2d series, tome 77, p. 52.

is protracted through several months, one is little disposed to believe in the intervention of the azote of the air; for if this gas intervenes, we can not see why the assimilation should be so limited, while it predominates in the composition of the atmosphere; on the contrary, the small portion of azote assimilated is readily understood, on the hypothesis of the intervention of ammoniacal vapors only; because since the atmosphere does not contain, so to speak, more than traces of the carbonate of ammonia, it could not furnish more than a very limited quantity of azotised elements to vegetation, carried on only under the influence of the air and of water.

The first idea which presents itself to the mind, in determining the question whether the azote appropriated comes from that which the atmosphere contains in a gaseous state, is to arrange an apparatus in which the plant will grow in air deprived of ammonia, and which is constantly renewed, suitable provision being made for the supply of carbonic acid, as a source of carbon. Still, on reflection, there is danger that such an arrangement does not furnish all desirable guarantees; for if the air passes through the apparatus very rapidly, and it will not fail to be so in case the carbonic-acid gas is not added, there will be no certainty of retaining all the ammoniacal vapor, all the organic corpuscles in the system for purification consisting naturally in a series of tubes of sulphuric powder. Still further: suppose, also, that the purification of the air has been complete, and also that azote has been fixed, during the process of vegetation, all that we are strictly authorized to conclude is, that this azote could not have come from the ammonia; for, to admit that it had made a part of the air in a gaseous state, it would be also necessary to prove that, independently of volatile ammoniacal compounds, and of particles of organic origin, the atmosphere does not contain, in proportion sufficiently feeble to escape the ordinary process of analysis, other elements capable of concurring in the formation of azotised substances in the vegetables. Hence it will be only in the case where the experiment shall determine that there has been no assimilation of it, that this method can be considered satisfactory.

From these considerations, in the researches which I have undertaken, I have preferred to make use, in the cultivation of the plant, of an atmosphere that was not renewed. My experiments commenced in 1851, and were continued to 1853.

It is with an apparatus in circumstances like that which I have described, that the experiments were made in 1851 and 1852. Grains were sown in pumice-stone reduced to the condition of small fragments, which were separated from the too small pieces by the sieve, then washed, calcined, and left to cool, taking all the cautions previously indicated. I have always introduced into the soil dust, after calcination, from ashes obtained from farm-yard manure, by a process of incineration obtained at a comparatively low temperature. The manure was first cut up, well mingled, dried, and then burned. Since it is well established that manure is suited to all kinds of cultivation, its ashes naturally contain all the mineral substances necessary for the plant. The quantity was varied with the amount of the soil, and generally the ash was obtained from grains like those on which the experiment was to be made.

The dust, being well moistened with water free from ammonia, it was allowed to remain twenty-four hours under a bell before the seed was sown. * * *

The fundamental principle of the method consists, as I have said, to determine the quantity of azote contained in a grain; then, afterward, the quantity of azote contained in the plant, the issue from a grain equal to that upon

which the former determination had been made, vegetation being always accomplished in such conditions that all organic azotised matters should be thoroughly dispelled. In fact, it was designed, by means of analyses, to ascertain if there was, in the crop, a quantity of azote equal or superior to that which the seed contained. * * * *

At the time of harvest, azote is found in the plant, in the soil, and even in the crucible, the matter of which, by reason of its porosity, absorbs and retains a portion of water charged with organic substances.

The plant, after drying in a furnace kept at a moderate heat, is cut, by scissors, into very small fragments. When it is thus divided, and all the parts are intimately mixed, a portion is taken to be submitted to analysis, and from this the amount of azote in the whole is computed. This is the ordinary course, and it is thus that I have sometimes proceeded. But now I believe I ought to criticise this practice. The plant, though well divided and mingled, is not so homogeneous that one can be sure, when the question is of very delicate appreciation, that the fraction on which he experiments, perfectly represents the whole. It is preferable, as I have always done in these more recent experiments, to operate with the whole of the crop, employing for its combustion tubes of a large size, and executing all the operations with care. The error of which the result is then affected, is that which is inherent to such processes, and which, whatever may be its importance, is not multiplied by 3, 4, 10, or 100, as a third, fourth, tenth, or hundredth part only of the plant was analyzed. It is especially when the point is to ascertain the quantity of azote in the organic *debris* scattered in the soil where the roots habited, that it is important to operate upon large quantities of matter. I have been able, by means of large tubes of Bohemian glass, to analyze either all the soil, or large portions of it, in such a manner that in the most unfavorable cases the whole error of the product was at most to be tripled. In proceeding otherwise, and not taking, for example, more than one gramme for analysis, and making two or three operations, most erroneous results may be obtained, since the dried soil coming from one experiment sometimes weighs near a kilogramme. The error made, and no analysis is exempt from it, will then, according to its kind, be multiplied by 333 or by 500, and if supposed to be only a demi-millegramme, that which one would commit upon a quantity of azote contained in the soil, might reach to 0·15 grs. or 0·25 grs. It would certainly be better not to take account of the azotised matters retained by the soil or by the crucibles. For in cases where the plant has not wilted, where there has been no fall of leaves, and where the *debris* of the roots has been carefully raised, the organic substance mingled with the soil is of very small moment, and the quantity of azote which enters into its constitution is not of a nature to change the results obtained from a comparative analysis of the seed or of the crop.

The determination of the azote was made by the process of M. Warrentrap, modified by M. Pelijot. The normal acid was prepared with very great care. Nevertheless, as the chief point is to prove differences, I have as much as possible employed the same acid to determine the azote in the seed and in the crop. When one is to operate upon a large quantity of soil, containing only a small proportion of the *debris* of a plant, he should pass 20 or 30 grammes of matter into a large tube, after having well mixed it with a very little lime, and receive, in a single small tube of normal acid, the ammonia resulting from repeated combustions, in order to lessen the error peculiar to the determination of a standard. By leaving the tube of Bohemian glass in which the matter was burned, to cool slowly, the constant breaking of it may be

avoided. I have been able, by means of this precaution, to make the same tube serve eight or ten determinations of earthy matters.

I have paid especial attention to cleansing, (*balayage*,) which is requisite at the end of each analysis, by the decomposition of oxalic acid placed in the bottom of the tube. It is known that the aim of this operation is to draw away in the acid liquor, with the hydrogen, and the aqueous vapor produced under these operations, the last traces of ammonia, formed under the influence of the alkaline hydrate. When this manipulation is not properly executed, it very sensibly affects the result. The loss of azote, occasioned by an insufficient cleansing, is the more important, as the substance examined is the more azotised; or else, for equal quantities of azote, or the substance which contains them, contains less organic matter capable of furnishing hydrogen gas or vapor during combustion. It is thus, for example, that for the same quantity of azote, a very moist substance will give, perhaps, all the ammonia produced before the oxalic acid is decomposed, while, if it had been dried beforehand, all the ammonia would not disappear without the aid of a well-sustained current of gas or of aqueous vapor. The reason is very plain. It is because, in the first case, the ammonia will be carried away by the vapor which will be developed through the whole of the operation. After numerous attempts, I am forced to believe that one gramme of oxalic acid, undergoing decomposition, is not always sufficient completely to expel the ammonia when a substance is analyzed containing three or four per cent of azote. So I have employed at least two grammes of this acid, in the determinations executed during the course of these investigations.

If, in a soil destitute of organic matters, containing the ash of manure, and well moistened with water free from ammonia, some grain of good quality is thickly sown, and if seed is then sown in a confined atmosphere, and provided with a proper proportion of carbonic-acid gas, note what ordinarily takes place. All the seeds germinate. At a certain time, the color of the leaves, the size and the rigidity of the stalks, in one word, the vigor of the vegetation, is similar to that of a culture carried on in a fertile soil. But if, from this prosperous state, and before harvest, one is disposed to conclude that the plants have found in the confined air, and in the water which the soil has imbibed, all the elements which have assisted in their development, he will expose himself to a mistake which analysis will speedily reveal. In fact, if the plants have acquired great vigor, it is because they have not vegetated in a sterile soil. Counting the grains will show that their number is less than the number of grains sown. There was not place for all, and those which did not germinate served to fertilize those which did. In this case, experience, though interesting, becomes complex, as I shall show in this memoir. The soil naturally is charged with a considerable proportion of organic substances; in fine, one is no more competent to judge how a vegetable supports itself, which, except the matter of its own organism, has nothing by which to develop itself but atmospheric air, carbonic-acid gas, water, and mineral substances.

In my researches, I have constantly obtained a number of plants equal to the number, which was very limited, of seeds sown; and thus I have found this advantage, that the earth contained but very little of organic *debris*, because, not producing more than one or two plants, I arrest the vegetation when I see the vigor of the plant begins to diminish before the leaves begin to fall. The crops, dried all at once, have also a weight which permits the whole to be analyzed in one or two operations, a condition which I consider as very favorable to accuracy of result.

[Then follows the account of three courses of experiments, in all their minute details, which occupies too much space for us to transfer to our pages. The learned writer then concludes as follows:]

The result of all these experiments is that the azote of the air is not assimilated during the growth of kidney-beans, oats, cresses, and lupins.

At a meeting early in April (1854) M. Ville renewed the discussion, as follows:

"Last year I had the honor, on two different occasions, to submit to the judgment of the Academy the results of my experiments upon vegetation. These researches have principally for their object to throw light upon the origin of the azote which plants take from the atmosphere, and to determine the form under which this azote is absorbed. An uninterrupted series of experiments, which commenced in 1849 and terminated in 1852, led me to decide that the ammonia of the air does not furnish any of the azote which plants borrow from the atmosphere. If one cultivate a plant in calcined sand, which is inclosed in a bell of which the air is renewed many times a day, although this air is deprived of all floating particles and of all ammonia, it will be found that this plant fixes an important quantity of azote; from which I have drawn the conclusion that the azote of the air could serve for the nutrition of plants.

In the session of 29th March, the Academy received a communication, the conclusions of which are in opposition to mine. This communication emanates from a distinguished man, whose opinion has great authority. On the other hand, I nevertheless maintain all my conclusions. I see nothing in the facts which are cited which can invalidate them. Thus, on the one hand, it is admitted that the azote of the air is absorbed by plants, and, on the other, it is denied that this absorption takes place. The question is then brought into very narrow limits, too narrow not to insure that the truth shall be elicited from the discussion of proofs which each invokes for the support of his opinion. But that this discussion may be profitable in its results, we should be careful to recall the phases which the question has assumed, at different times, since Saussure, and to bring to light the efforts, often dissimilar, but always persevering, which have been made for two years, to place the theory, which asserts that plants derive azote from the ammonia of the air, in harmony with the facts in good husbandry which falsify it.

The first efforts which inculcate the absorption of azote by plants are traceable from Saussure. In the experiments of Saussure, he never had an absorption of azote. But we know, notwithstanding, that the results attained by this learned man show the insufficiency of the method which he pursued. In fact, if clover and peas are cultivated in calcined sand, although they are watered with pure water, and although they are warmed in the interior of a glazed pavilion, to shelter them from the particles what float in the air, it is found that these plants absorb notable quantities of azote. Such experiments have been made through two years in succession, by M. Boussingault, and always with the same result. On the other hand, I have myself verified the reality of this absorption. Thus all agree that plants take part of their azote from the air; but some attribute the origin of this azote from the ammonia of the air, and others from the azote itself. This last opinion is that which I sustain.

The learned men who give preference to the contrary opinion, the learned men who attempt to trace the origin of the azote of vegetables from the ammonia of the air, accord to the rain an important influence in this phenomenon. They admit that the rain condenses, under a feeble volume, the traces

of ammonia which are dispersed in the air, and draws to the plant, in a reduced form, the azote which it requires. Thus the rain is the vehicle of the ammonia. But if this opinion is true, we have a simple way to find it out. In fact, it would be required, of necessity, that the rain-water which falls upon one hectare of ground, in the course of a year, should have sufficient ammonia to account for the azote which certain crops require, beyond the azote of the manure which served to produce it.

Under this aspect, facts are contrary to the theory. In Alsace, the crop which one hectare of land produced, cultivated with artichokes, contained 43 kilogrammes of azote more than the manure which had been applied to the land. On the other hand, the rain which fell upon the surface of one hectare did not contain more than 3·54 kilogrammes of ammonia, or 2·92 kils. of azote. Evidently, the 43 kils. of azote absorbed by the plants could not come from 2·92 kils. brought down by the rain.

To this it is answered that in rain-water there are nitrates, and that nitrates are as useful to vegetation as ammonia. Admit that it is so; admit beside, which is very improbable, that in one cubic metre of rain-water falling upon the field there are 14·98 grs. of anhydrous nitric acid, which is the quantity found by M. Barral in rain-water at Paris; and admitting, finally, that all of the nitric acid and ammonia is appropriated by the plants, it is found that one hectare of land received at Strasbourg, under the form of ammonia and of nitric acid, 29·35 kils. of azote, which is very far from 43 kils. absorbed by the artichokes.

To this it is again replied, rain-water contains much more ammonia at the beginning than at the end of a shower; the water which descends in fogs and dews abounds in ammonia; plants receive ammonia not only from the rain, but also from dew and from fogs. Every reduction of temperature, condensing the water which is in a state of vapor in the air, becomes to the plants a source of ammonia. Finally, beside all these sources, particles which float in the air add to this supply.

To all these reasonings I shall offer but a single objection. I shall demand whence comes the azote which the clover and the peas have absorbed, in the first experiments of M. Boussingault? Vegetation was carried on in the interior of a pavilion. The plants were consequently deprived of rain and deprived of the fogs. They received no nitrates, and by the acknowledgment of M. Boussingault, particles floating in the air had no influence upon the vegetation.

I reserve to another time an inquiry into the question, what the water did or did not contain, and whether it is as rich in nitrates as we have admitted it to be. But it seems to me that if these principles (elements) play so important a part in the production of plants as is claimed, a hectare of land watered by distilled water should produce a smaller crop than the same extent of surface watered by rain-water. But what is true of a hectare should be equally true of a fraction of a hectare. For the purpose of assuring myself, I made the two following experiments: Two boxes, of zinc, and varnished in the interior, were taken, each of which measured one metre on a side, and 30 centimetres in depth. In each box was a layer of pebbles, carefully washed, then a second layer of 100 kilogrammes of earth. The two boxes were buried in the soil, at a depth of 25 centimetres, and surrounded with a pavilion, with glazed windows, which opened on all sides like the doors of an apartment. The top of the pavilion was covered also with a glazed sash, which was an inclined plane, to afford an escape for the rain. A hudometer, having a surface equal to that of one of the boxes, was by the side of the box. After

every rain, the water was collected and poured upon one of the boxes. Upon the other, an equal volume of distilled water was poured. The experiment was commenced on the 15th of March and was terminated on the 15th of July. The result was not favorable to the theory that the azote of plants is derived from the azotised matters of rain-water.

The difference between the two crops consisted in the order (ordre) of development which was observed under the same circumstances. In fact, the surface watered by rain produced 425·22 grs. of crop, in which were 3·9 grs. of azote. The surface watered with distilled water produced 469·4 grs. of crop, in which were 4·1 grs. azote.

To this experiment it may be objected, it is true, that rain furnishes to plants only a part of the azotised matters which they receive from the atmosphere, while the greatest part comes from the fog or the dew, and, above all, from the particles floating in the air. This opinion can not be supported, for the same grain as that cultivated in the boxes, cultivated in the same soil, though inclosed in a bell, the air of which was renewed many times a day, after being deprived of all the particles which it held in suspension, produced as much grain as that cultivated in the open air, and double the amount of straw. Beside, facts of another class seem to me to leave no doubt as to the secondary part which the azotised matters of rain play in the nutrition of plants. We have admitted that a hectare of earth, cultivated with artichokes, takes from the air 43 kils. of azote, because the crop contained 43 kils of azote more than the manure.

In assuming this number of 43 kilogrammes as the expression of the quantity of azote furnished by the atmosphere, we have supposed that the whole of the azote of the manure had been appropriated by the crop. If, contrary to this hypothesis, it can be demonstrated that a part of the azote of the manure is lost during the progress of the growth, that it is dissipated in the air, in the form of ammonia, it results from this, that the surface under culture will in fact have absorbed more azote than has been claimed; and if the ammonia brought by the rain is only a fraction of what the soil has lost, it is evident that, in either case, the azote absorbed by the growth could not come from the ammonia of the rain. But this loss of a part of the azote of the manure is placed beyond doubt by an experiment of M. Boussingault. This learned man has found, in fact, that a bed of snow which had remained during thirty-six hours upon the soil of a garden, contained 0·085 grs. of ammonia per litre of water, more than the water from the same snow, collected immediately after its fall. As to the origin of this excess of ammonia, M. Boussingault adds that, to his mind, there is the highest evidence that it came from vapors emitted from the soil.

But if we admit that the bed of snow had one centimetre of depth, it will follow that each square metre of surface corresponds to 10 litres of water, which shows, consequently, the certain loss of ammonia to be 0·856 grs., on one square metre, in thirty-six hours, and, consequently, the certain loss to be 856 grammes per hectare in the same time. If we admit, finally, that each day of the year the loss has been the same as in that upon which the snow fell, we arrive at this result, that one hectare of garden-soil, upon land on which the snow has remained for thirty-six hours, dissipates, in the course of one year, 208 kilogrammes of ammonia, or 172 kilogrammes of azote. I would not attach to these numbers more importance than belongs to them, but present them only to establish the principle; for it is evident that if the azote which the earth receives from the rain is but a fraction of the azote of the manure lost by the earth, then the excess of azote on the crop can not

come from the ammonia of the rain, from fogs, nor from dews. But this is the only point which I wish to make prominent. Thus, while the most recent analyses apportion to the rain and to the air, more and more minute (faible) quantities of ammonia, on the other side, on the contrary, a more profound study of the production of plants establishes beyond doubt, that the air furnishes to plants much more azote than has been supposed. I have thought that it would not be without profit to bring to the light these two facts, before I occupy myself with the last memoir of M. Boussingault. My answer to this memoir will form the subject of the second part of my communication.

[During the next session the discussion was resumed by Mons. Ville, and the following report is made of his remarks, in the printed journal:]

"I come to the memoir which forms the subject of our disagreement. This memoir comprises three points: 1. A critique of the method I have pursued. 2. An exposition of a different method which the author considers preferable. 3. The general conclusion that the azote of the air is not absorbed by plants. I proceed to treat of each separately.

In his researches, M. Boussingault has never obtained more than a few grammes of growth. The weight of this growth is scarcely three or four times that of the seed. Thus, to cite only two examples: In 1852, a bean, weighing 0·53 grs., after two months' cultivation, produced 0·90 grs. of crop; in 1853, two of the lupin, weighing 0·82 grs., produced 1·72 grs. of crop. All the results were analogous. On the contrary, in my experiments in 1850, 3·4 grs. of seed produced 64·20 grs. of growth, (dried to 120 degrees.) In 1851, 0·35 grs. of seed produced 68·80 grains of growth, (dried as before.) In 1852, 8·00 grs. of seed produced 229·61 of growth, (dried as before.) Thus, in 1851, for example, the weight of the growth is 186 times that of the seed.

In the experiments of M. Boussingault, the quantity of azote lost during this period of culture, varied from 0·019 grs. to 0·124. In my experiments, the only quantities of azote absorbed were:

In 1849, . . .	0·103 grs.	In 1851, . . .	0·481 grs.
In 1850, . . .	1·180 "	In 1852, . . .	1·624 "

So, under the double report of the quantity of growth obtained, and of quantities of azote absorbed, there is a very marked difference between the researches of M. Boussingault and myself.

On the other side, if we inform ourselves of what is passing in natural vegetation, we shall find that plants develop themselves much more than in my experiments. We shall agree that they contain much more azote, and that they reproduce their seed every year. In my experiments, the wheat has produced grains of perfect organism, and the sun has produced rudimentary grains. In the experiments of M. Boussingault, there is never a vestige of fructification. So, in a general manner, I have more nearly imitated the conditions of nature than M. Boussingault. This result is independent of all numeric calculations.

2. In my experiments, the quantity of azote absorbed is considerable. One contends that this azote comes from the azote of the air; another, that its origin is from the ammonia, of which the air contains faint traces. I hasten to examine what this claim has for a foundation. I will limit the discussion to the experiments of 1850.

In 1850, in a bell, into which 65·154 litres of air had been passed, some plants which were sown in calcined sand absorbed 1·180 grs. of azote. To account for this absorption, it would require that the air should contain 17

kilogrammes of ammonia in a million kilogrammes. But we know of a certainty that it contains less than 133 grammes. (Graham.)

It is again objected that the azote absorbed by the plants comes from the particles (poussières) which the air holds in suspension. Admitting that these particles contain 10 per cent of azote, for which this supposition would furnish some foundation, it would require that 11·180 grs. of particles should pass into the bell, that is to say, nearly a million times more than M. Boussingault has ever obtained in a direct examination. (3 milligrammes to 15,000 litres of air.)

In 1851 and 1852, the experiments of 1850 were repeated, but under other conditions. Before entering into the bell, the air passed under coal-dust impregnated with sulphuric acid, and then into a solution of bi-carbonate of soda. Hence, from that instant, the particles of ammonia could not affect the result. But, the plants having absorbed as much azote as in the first case, I draw the general conclusion, that the objections which have been urged against me do not at all weaken my conclusions.

The recent experiments of M. Boussingault have invariably consisted in sowing a few grains in a confined atmosphere, and the experiment has been left to take care of itself. Since 1851, I have been convinced that under these conditions vegetation could not be supported. Indeed, if any one will make two experiments, simultaneously, upon the same plant, upon a cereal, for example, in one of which the air of the bell shall be renewed, and in the other shall not be renewed, in the first the plant will develop a good stalk and produce grain, in the second the same plant will form a very lean stalk and produce no grain. Hence, the renewal of the air is an essential condition to the success of the experiment. But one can not invalidate the results of experiments conducted with a renewal of air, by other experiments conducted in confined air. It may be said, it is true, that I attribute too much effect to a change of air—that plants prosper equally well in the two cases. In order to meet this objection, I have thought it proper to report the following experiment, which was repeated from that of 1837, and for which science is indebted to M. Boussingault:

"The 1st of September, 1837, some clover was sown in a porcelain pot, filled with calcined sand after the pot was inclosed in a bell. Each day 500 or 600 litres of air were passed into the bell; and to intercept particles, it was washed in a tube and bowl of Liebig's, half full of water. But in these new conditions, the clover absorbed 0·008 grs. of azote in a month, and still no account was taken of the azotised matters with which the sand of the pot remained impregnated. Thus, although the recent experiments of M. Boussingault charge a loss of azote, the only one which he had made in which he placed himself at all in the conditions in which I have since experimented, he finds a gain. It is true, that one may still demand why, under these conditions, M. Boussingault obtained so feeble an absorption of azote, and why I succeeded in obtaining one so large. The difference results in a great measure from the nature of the pots used by M. Boussingault. In fact, this learned man has always used pots of porcelain. But in these pots vegetation never flourishes. The sand consolidates itself at the bottom of the pots, the roots penetrate it with difficulty, the gases which surround these do not renew them, vegetation suffers; and the best proof one can have of this is, that M. Boussingault has never obtained a growth more than three or four times the weight of the seed.

When one experiments upon living plants, the first condition is, that they should always be able to fulfill their functions. If a plant is confined, so

that the roots can not extend themselves, if their spongioles can not find a supply of gases and the oxygen which is necessary for them; in fine, if the evaporation of the water which flows into the leaves be obstructed, that plant finds itself in an abnormal condition, and will not succeed. But now, because vegetation is languishing, and plants do not develop themselves, is one authorized to conclude that plants do not find in the air all the materials which their nourishment requires? and, because the surrounding azote is not absorbed, that it is not absorbable in its natural condition? So far from this, in reality, it shows that this result is but the effect of a defective experiment. And, in fact, if we inquire why a plant which is confined in a sphere does not prosper, although it is furnished with more oxygen and carbon and azote than it could absorb under circumstances in which it might prosper, it is because in these special conditions the plants could not relieve themselves of the excess of water which the use of sap caused to flow into their leaves, and the evaporation of which is an essential condition by means of which the circulation of this fluid is secured. And how, in fact, could any evaporation take place? The plant is confined in an atmosphere which is saturated with moisture. Evaporation is not possible until the temperature of the interior air assumes an ascending motion, and during this the elastic force of the vapor of the water augments at the same time with the power of saturation of the air as to moisture. And again, as to this particular case, the plant loses a part of the benefit which this elevation of temperature creates for it, since the water which collects upon the interior walls of the sphere contributes more than the evaporation of the sand to saturate the air with moisture.

On the contrary, in a bell in which the air is renewed, the air which enters is of a temperature inferior to that of the bell. In proportion as the temperature is elevated, it is charged with a new quantity of vapor. Each litre of air which arrives may be considered as a void space which the evaporation of the sand should contribute to fill, especially if one is careful, by an arrangement which I always adopt, to make the air descend from the top of the bell, and to come in contact with the plant before leaving it.

If we strip the discussion of this incidental question, the disagreement is confined to very narrow limits. On one side, it is said that the azote of the atmosphere does not promote the nutrition of plants; and on the other, on the contrary, that it is absorbed by them. To justify the former opinion, one cites experiments carried on in a confined atmosphere; to demonstrate the second, that which ascribes a positive and direct agency to the azote of the air, in the phenomena of vegetation, reliance is had upon experiments made in a renewed atmosphere. The whole question is then reduced to this—to discover whether plants act in the same manner in the two cases. But since, in operating incidentally, in a renewed atmosphere, M. Boussingault has discovered a feeble absorption of azote, the disagreement becomes still more limited, and is finally reduced to the ascertaining whether it is in the nature of the phenomena that it remains feeble, or if, in adopting the conditions which I secured, it can be made stronger. This question can not be solved without a new experiment, under the control of the commission. For myself, I desire to facilitate the execution of this experimentation, and I have constructed two sets of apparatus, which I place at the disposition of the commission," etc.

NOTE.—A millegramme is ·0154 grains; a centigramme, ·1543 grains; a decegramme, 1·5434 grains; a gramme, 15·4340 grains; a decagramme, 154·3402 grains or 5·64 drachms averdupois. 10 decagrammes = a hectogramme; 10 hectogrammes = a kilogramme.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

MR. BOYDEN'S PLACE, TOPSFIELD, MASS.

USE OF HAZEL-RODS BY MR. WILLARD.

MESSRS. EDITORS: Having just returned from a visit to my friend, Fred'k Boyden, of Topsfield, you will please accept some crayon-sketches of his freehold, and some of his animals. It is the old Crowninshield Farm and mansion, including some two hundred acres, capable of yielding as many tons of English hay, beside all that is needed for pasture, tillage, and a spacious garden, with a great and choice variety of fruit-trees, shrubbery, and vines accessible by walks which have been sown with salt, so that not a weed or spire of grass impedes the pleasant rambles. It is one large swell of land. The buildings are on the eastern slope, near the greatest elevation, surrounded by many kinds of ornamental trees, among which the fir and maple are conspicuous on the avenues; apple-trees by the walls inclosing and dividing this extensive and princely domain, which were built at an expense of some thousands. The land is generally rich and productive, having suffered little from the drought, so extensively and long prevalent.

It was to designate a spot where to dig for a spring of living water, that I was requested to visit his premises, that might, if possible, be brought to his barns in pipes, where his large stock is now supplied by a chain-pump from a well 40 feet deep, requiring the labor of one man a great part of his time. In this I succeeded by the use of mineral-rods: finding a vein of water 25 feet deep, running toward the barn, from the height of land, till within 12 feet of the surface. From this point it may be conveyed, with a strong pressure, to his stables, and after accommodating his large herd of swine in the barn-cellar under them, waste into a reservoir. I might add, several gentlemen were present during the examination, from different towns, who witnessed the operation of the rods, and the highly satisfactory results. After which, I examined the grounds of another gentleman, who had thought he would spare no expense for an aqueduct, if he could bring water into his chambers. After long and carefully traversing his premises, we succeeded in finding a spring sufficiently elevated for his purpose. This took most of the day, and demonstrated to the most skeptical the merits of this immense labor-saving operation, as a reliable way of ascertaining these subterranean channels, or springs of living water. In some cases, we could trace a vein by the perpendicular attraction of the rods, occasionally setting stakes, and ascertain its depth by stations on each side, where the attraction would be horizontally according to the distance from the stakes over the vein. In one case we found the attraction toward a single point, from any station within fifty feet; hence we concluded there was a boiling spring.

I was highly gratified by inspecting some fifty of Mr. Boyden's pigs, and by learning their pedigree to be unquestionable. They are pure Suffolk, from the Stickney importation. The best plates I have ever seen are a fair daguerreotype of some of his boars. He has one, three years old, as nearly perfect as could be desired. Most of his pigs are from this beautiful sire. I could not leave till I had selected a pair from a favorite sow, which I expect soon to receive by the cars, and feed with pleasure. He has sold some to go to Iowa! We must esteem him a "benefactor," who furnishes the sire and

dam of a breed gaining two pounds of fat per day, with the same feed that would, in any other breed, gain but one, no less than he who does the same in grass.

When we had taken tea, I feared we should miss the cars, as the railroad station of Beaver-Brook was three miles distant. He said, "No"—harnessed his stallion, 19 years old—looking at his watch, said, "Time enough." True; we were there in twelve minutes, under a check rein. He showed me his young stud, "Tri-color." The next day was Cattle-Show at Lawrence, and I notice since, in the *Massachusetts Ploughman*, "The first premium of $20, for best stallion, 'Tri-color,' was awarded to Frederick Boyden, of Topsfield." I saw some of the stock of both his old and young horse, two-year old colts, that he said could not be bought for $200 each! His swine were exhibited last year, and are known and appreciated. I doubt not the publisher, the writer, and the subject of this article, would participate in the pleasure of aiding in the wider circulation of this choice breed of swine, if twenty farmers, in as many counties this side of Iowa, should each send for a pair, or a boar only, to cross with the best sows of other breeds; thus giving them service in supplanting some of the wretched animals I will not describe.

Yours, truly, BENJAMIN WILLARD.

Lancaster, Mass., Oct. 4, 1854.

BUILDING MATERIALS.

GRANITE AND SYENITE.—Granite occurs very extensively through this country, but it generally occupies a small extent of surface. It is protruded in the form of veins and irregular beds. What is denominated granite is not always properly so called. The true granite often passes into syenite. The difference is this: Granite is composed of quartz, feldspar, and mica. Syenite, of quartz, feldspar, and hornblende, with very little mica, or none at all. The far-famed "Quincy Granite" is a true syenite.

These rocks occur extensively in Canada, and on through New-England, being separated from those of Canada only by a narrow strip of more recent rocks in the valley of the St. Lawrence. From New-England they extend south-westerly, parallel to the coast, in a belt, somewhat limited in width, nearly to the Mississippi. On the west side of the continent, granite and its associates constitute the base of the Rocky Mountains.

The prevailing rocks in the mountainous region of Essex county, N. Y., are hypersthene, which is a variety of syenite. Granite and syenite form the most durable building material, and can be wrought into very handsome forms. We have seen wreaths, oak-leaves, and other fanciful patterns, cut in very bold style from this rock, on the caps of pillars, pilasters, etc., with very good effect. Still, in beauty it must yield to marble, which has beauty in itself as well as in the designs sculptured out of it.

When very large buildings are to be erected, admitting architectural designs suggestive of grandeur rather than lightness and grace, the granite is a very suitable material. We know of but one objection to it, and that is its inability to bear the *experience* of a fire. It endures heat without injury, and in this may be and probably is superior to marble, or the brown sandstone, (which we are yet to describe;) but if water is thrown upon it when

thoroughly heated, chips fly from it in great quantities, and the finish of the surface is utterly ruined. It may be even that the whole block, thus exposed to sudden change of temperature, will split in pieces. We have seen window-caps, and other small blocks, thus broken in more than one instance. But those who have seen the Tremont House, in Boston, or some of the large warehouses on the *wharves* and water streets of that city, or have noticed Trinity Church, in Summer street, and the two beautiful blocks of stores by the side of and opposite to that church, to say nothing of some others in Milk and Pearl streets, in that "Granite City," will no doubt agree with us, that it is a very admirable material for such uses as we have described.

The most widely-known quarries of "granite" in this section of country, (Eastern Massachusetts,) occur at Cape Ann, Quincy, and near Chelmsford, all in Massachusetts. A ledge of this rock extends from Cohasset to Quincy, and another from Cape Ann to Salem. Valuable localities are also found in Danvers and Lynnfield. On Cape Ann, at Squam, blocks have been cut out 60 feet length, and at Pidgeon's Cove, 100 feet long and 4 feet thick. Most of the granite of Eastern Massachusetts is good as a building stone, while nearly all in the western counties is coarse and quite unsuited to such uses.

The famous Chelmsford granite is quarried, not in Chelmsford, but in the adjoining towns of Westford and Tyngsboro'. At Pelham, N. H., 4 miles from Lowell, and at Fitchburg, granite of similar character is found. The latter constitutes the mass of a hill 300 feet high. At these localities it has been quarried to some extent. Granite suitable for building is also found in Western Massachusetts, in Northampton, Whately, and Williamsburg, and a good syenite in Belchertown. The westerly part of Worcester county, Hampshire, Hampden, and Franklin counties, also produce a gneiss which forms a good building stone.

In Rhode-Island, gneiss is the predominant rock, through the southern and western parts of the State, and some valuable quarries are wrought.

The cost of these blocks is small compared with almost any other kind of rock suited for such uses. Those of the Bunker-Hill Monument, in a rough state, delivered at Charlestown, was 13 cents and 3 mills a foot. The cost of hammering and fine dressing granite, in Boston, on the style of the Tremont House, is 30 cents a square foot. The columns of the Hospital cost one dollar a foot.

As already suggested, granite extends over nearly the whole length of the States. But the number of quarries, at least those known beyond their own neighborhood, is comparatively limited. The survey of South-Carolina has made known to the public several very fine quarries within that State. In Lexington and Newberry districts fine granite for building purposes is abundant. It extends for many miles, and being near the banks of a navigable river, is of convenient access. It is described as resembling a coarse gray marble. The granite of Kershaw is remarkable for its crystalline structure. There is also a porphyritic granite near Camden, which is said to be very handsome. Syenite occurs in Abbeville, Fairfield, and Lexington districts, which is described as resembling the "Quincy Granite." Gneiss also occurs in the same State, some of the varieties of which are equally substantial and desirable as syenite, although the proportions of the minerals of which gneiss is composed differ very much in different localities. Gneiss underlies most of the marbles of South-Carolina, and when these are opened other treasures, equally valuable, may thus be made productive.

We regret our inability to point out many more of these sources of wealth, existing almost without limit in numerous sections of our country. If our

readers will give us information on this subject, each in his own locality, and through as much wider extent as his information will permit, we shall cheerfully give room for it in these pages. Our object is to draw out these hidden treasures from the comparative ignorance which prevails everywhere, almost, out of New-England, in reference to them, and by making them known, open new sources of wealth and of beauty and of convenience. They are far more valuable to a community than those of silver and gold, and each section of country, as far as possible, should rely on their own resources for these very important productions.

The sand-stones, etc., will occupy our attention in our next issue.

RAISING FOREST-TREES.

Why will our land-owners fail to do "themselves and the state" good service, in giving their practical attention to this sort of culture? No crop is surer nor so sure, and many crops that cost much labor will not pay half as well. Wood must be in great demand in this country for all kinds of use. As fuel, it can not be entirely dispensed with. For a building material, for many sorts of structures, there can be no substitute, and for a thousand miscellaneous purposes it is indispensable. We can do as well without grass as without the product of the forest.

We have recently described the proper culture of the locust, a tree of pre-eminent value. Other trees are as essential in their way. And some will pay a compound interest. For example: a sugar-maple grows and flourishes with a vigor scarcely diminished, though forced to yield to the sugar-maker many gallons of sap every spring. Probably a little more careful cultivation would restore all the loss it might otherwise sustain. Hence it furnishes a very profitable crop, always commanding cash in the market, while it also produces as pleasant a fuel as can be found. We know of nothing, unless it be hickory, which is more desirable for such use. For charcoal it is one of the best of trees—while its timber is useful for many purposes. Beside all this, it possesses uncommon attractions as a shade-tree.

Birch-trees can be sown or transplanted with very little cost or trouble. The chestnut is also a desirable tree. It flourishes where many crops would starve. A dry sandy loam, enriched only by its own product, is its natural soil. Hence it would prove successful on land where little else would grow, and where nothing else would render a very liberal return. The most important elements required by deciduous trees are alkaline. Nearly one tenth part of the ash of such, and even of most trees, is of this character. Hence, when pines and other evergreens have been cut off, and the land has been burned, we find a second growth of deciduous trees. The land is changed in its character, so that what had before but a scanty supply of these elements, is now better furnished with them, and under these improved circumstances the seeds of the deciduous trees, dispersed everywhere, by winds, snows, water-streams, birds, animals, etc., germinate and grow, to the exclusion of those for which the soil and other conditions are not now so well adapted. Trees of the fir tribe, we are told by Liebig, grow upon the sand-stone and lime-stone of the Carpathian Mountains, and the Jura. The finest forests of deciduous trees

cover the soils "of gneiss, mica, slate, and granite, in Bavaria; of clinkstone on the Rhone, of basalt in Vogelsburge, and of clay-slate on the Rhine and Eifel, while they can not be produced on the sandy or calcareous soils on which pines thrive."

The black-walnut and the butternut (quite worthy of culture for its capital nuts) need a deep gravelly loam, or a rich clay. A calcareous soil is best adapted to these. The hickory, oak, beech-tree, etc., will not succeed so well in sand, but either of these trees will grow in any good primitive soil. Oak grows well on any variety of good soil, if it be not too wet.

The various nut-trees should be sown before the nut is thoroughly dried. Follow nature. Those with a hard shell require the action of the frost, and should not be buried too deep. If not quite fresh when planted, all seeds should be soaked in water before they are sown, and with many, if gypsum or other fertilizer is partially dissolved in the water, and suffered to adhere to the seed, so much the better. Seeds, properly matured, are nature's only reliance, and hence, if we are wise in copying her ways, we can not fail to obtain the reward of our labor. The cedar grows in any soil, from dry sand and gravel to rich loam.

But something more than this general information is desirable; for in fact this is no more than any observing man would be likely to discover for himself, and therefore we present, in a concise manner, the principles adopted in countries where such culture is systematically entered upon. In some parts of Europe, the growth of forests is as scientifically conducted as crops of wheat. The following method, which combines the culture of trees and of ordinary crops, is perhaps as judicious and as practicable, in this country, as any other plan, though by no means the only one by which a growth of trees may secure substantial benefit both to the land and to its owner.

For new countries, where the original forest is still in existence, the first suggestion may be important, but it would not of course be applicable to the older sections of our country; such farmers are interested only in the subsequent suggestions, but all these are worthy of note everywhere. We proceed to set forth our method:

1. Choose a forest the circumstances of which are appropriate to such a treatment, and divide it into a certain number of sections or *cuttings*, having regard to the condition and qualities of the soil, climate, and the kind of tree desired.

2. Each year one of these sections is cut down and cleared, and the soil is devoted to cereals, as an ordinary field.

3. A kind of tree adapted to the wants of the place is selected, and these are planted in rows, at a distance of 50 feet or upward, as one has a desire to increase the growth of wood, or of grass, or of grain. The stems of the trees forming these rows should be from 2½ to 4 feet distant.

4. Between the rows of trees grain or some other crop may be cultivated, so long as the trees will not injure them.

5. When the trees grow to such a size as to injure each other, part of them should be cut down.

6. The land should not be cultivated when the trees shall produce a shade injurious to the crop. Other trees should be cut from time to time, until a suitable number is left, regard being had to the use to which the trees are to be applied, whether for fuel, timber of large or small size, etc.

7. When the trees have reached a suitable age they should be cut down, the stumps removed, and other trees planted. But the trees should now be

planted where the crops were cultivated before, and the crops sown where the former row of trees was grown.

8. The rows of trees should range north and south.

Fruit-trees or forest-trees might be treated by this method with great benefit.

On the selection of the place, regard should be had to the exposure, and position, as well as to the soil.

Grounds that are to be treated in this manner should be well prepared and cultivated. To plant trees when the soil is not in a suitable condition, would be a waste of labor.

Numerous comparisons have shown that a growth of sixty years, thus conducted, fully equals that of one hundred and twenty years in the native forest. More abundant crops are obtained by the alternate culture of different kinds of plants. If a soil, exhausted by successive crops, is planted with trees, and it remains forty years in this state, cereals will afterward grow upon it with much more vigor than before, and even for some years, without manure. But fruit-trees and vines can not succeed each other on the same ground with advantage.

In India, when the soil is exhausted by crops of indigo, trees are planted for the purpose of restoring its fruitfulness. In default of trees, the ground is covered with branches, or brushwood, which are useful in restoring freshness and vigor to the soil. Every thing which covers the ground promotes its fertility. A heap of stones at the foot of a tree promotes its growth.

Among the advantages of this system, one important consideration is that by it no ground is wasted. The space required by the trees, in different stages of their growth, is furnished, while the cultivation of other crops is not interfered with by the growth of the trees. When cereals can not be profitably raised, crops of grass may be obtained until the growth of the trees is such as to interfere with any other crop. When the trees have reached a certain growth, they will not be liable to injury if cattle are turned in to feed upon the grass, while trees that are planted in pasture-lands are often destroyed.

ON PRUNING TREES AT THE TIME OF TRANSPLANTING.

How should trees be pruned at the time of transplanting? or should they be pruned at all? are yet open questions among planters. As the subject will at this season of the year be one of the most general interest, we propose to offer a few remarks on it.

The objects in view in pruning a tree at the time of transplanting are threefold. First, *the removal of all bruised and broken roots and branches.* The necessity of this is obvious and indisputable: bruised and broken roots when planted without being dressed, must decay and interpose very serious obstacles to the formation of new roots; they should therefore always be pruned off closely to the sound wood, and with a sharp knife that will make a smooth, clean cut, the sloping surface of which should invariably be on the under and not on the upper sides of the roots. In making the cut, the knife should be laid to the under side of the root, and drawn upward. The young roots which subsequently spring from the cut end of the root, as from the end of a cutting, strike downward at once, as is natural. The reasons for pruning off broken or bruised branches are equally obvious. A broken branch left

on a tree will produce an unsightly and in some cases a dangerous scar; but if it be pruned off close to the body of the tree, or to a sound bud, the wound will soon heal over or a new shoot will be produced. It is very common, in pruning hastily, to leave small portions of branches without eyes. These, instead of producing new shoots, die off, and the new wood growing in around them produces unsoundness that in many cases brings the tree to an untimely end.

The second object in pruning is, *to mould the tree to the desired form.* Trees coming from the nurseries are seldom in the exact shape that the planter wishes. They have too many side branches, their heads are too low or too high, or they have some other defect which the knife must remedy. Now the question comes up, How far is it judicious to attempt the formation of the tree at the moment of transplanting? Several points must be considered. If the trees are standards for the orchard, and they happen to be somewhat slender in proportion to their height, it would be unwise to prune off *closely* any side-branches they might have, because this would direct the future growth to the top, and urge the tree still further out of balance and proportion. In such cases, the aim should be to increase the growth of the *stem;* and this can only be done by retaining two or three good eyes or buds of every side-shoot, or of a sufficient number of the strongest and best, and by reducing the attracting power of the branches at the top. The influence of this is seen in the case of forest-trees planted in the street, where the entire head is sawed off at planting, and nothing but a bare pole or pollard left; the growth is thrown into the trunk, which soon becomes covered with new shoots, and increases its diameter rapidly. If the tree has been pruned up too high in the nursery, making the head higher than desired, a new head must be formed lower down by cutting back the tree; but whether it is better to attempt this at the moment of transplanting, or wait until the tree has taken root, and is capable of making a vigorous growth, is a question. This is a point of some importance. We know that newly-planted trees push but feebly at best, in comparison with those well rooted, and that the shoots produced the first season make a very indifferent frame-work for the tree. We have considerable experience on this very point, and we have come to the conclusion that it is much better to defer the pruning which is to produce the final and permanent form of the tree, until the second year, or until the tree shows unmistakable signs of being well rooted, and in a condition to make vigorous growth. But care must be taken to preserve and encourage, as far as possible, young shoots with active buds on the parts where we intend to produce the new head; because *old* wood, in which the buds have become in a measure dormant, does not throw out branches with desirable rapidity and vigor.

If, on the other hand, the head be too *low*, the first impulse would naturally be to prune it up. But this demands some caution. Where branches of considerable size are pruned off, when the tree is transplanted, and consequently unfit to make much growth, the fresh surface of the wounds dry up, and do not heal over quickly, as when the tree is in an active and vigorous condition. Beside, buds are essential to growth; and if too great a proportion of them be removed at once, the power of the cells or sap-vessels is impaired, and they can not transmit the nutritive fluids from the roots upward. The roots, too, lose their activity, and general stagnation and debility follow. The better way is to reduce the head by thinning out some branches and shortening others, especially the lower ones; and in the season following, or when the tree has fairly recovered from removal, the large branches may be

removed and the stem formed higher up; the upper shoots allowed to remain having sufficient power to maintain the functions of the different parts of the tree in full force and vigor.

The third object in pruning at the time of transplanting is, *to restore the balance or proportion between the roots and branches, which has been disturbed in the process of removal.* A transplanted tree, no matter how carefully or skillfully it may have been operated upon, has its system materially deranged. The roots may neither be bruised or broken, nor the fibres dried or injured by exposure; and yet the ordinary functions of the various parts, and their reciprocal action and influence upon each other, can not but be in a measure arrested for a time. The roots can not abstract nutriment from the soil, and convey it through the trunk and branches, to supply the demand of the leaves, until they have taken to their new position and emitted new rootlets or feeders. Until this takes place, the demand of the leaves must be supplied from the stock of nutriment previously laid up in the cells, just as we see young shoots subsisting for a time on trees that have been cut down or torn up by the roots. As long as any sap remains in the cells, and can find a passage to the leaves, the latter continue green and healthy; but as soon as the sap is expended, and the cells dried up, the leaves wither, and vitality terminates. Transplanted trees are, until re-rooted, in the same situation, nearly, as trees cut down or rooted up and left on the surface of the ground—that is, they must rely mainly on the sap existing in the cells before removal. Now it is plain that the more of buds and leaves there are on a tree, the greater will be the demand upon its stock of sap or nutrition, and *vice versa*. Hence the reason for recommending to reduce the tops of trees at the time of transplanting. For this reason we can not transplant deciduous trees safely while in full foliage. Even strawberry plants root better by having a portion of their leaves removed; and hence the use of bell-glasses and other contrivances to prevent evaporation from the leaves of newly-inserted cuttings. A tree transplanted with a small number of roots, or damaged roots, and a branchy top, will suffer from the evaporation of the leaves, just as a cutting of leaves would if it were freely exposed to the air, though perhaps not to the same extent. Some trees will bear planting with smaller roots and larger tops than others—such, for instance, as the poplar and willow, and all those that root easily and rapidly, and have large sap-vessels through which nutriment absorbed by the roots can pass quickly to the leaves.

But we must remember, too, that leaves are necessary to the growth of roots. It is true that new roots are formed in the absence of leaves. We can see this illustrated in the case of early autumn-planted trees or cuttings: yet these roots would not attain any considerable development, nor survive long without the action of the leaves; for these may be likened to the animal stomach, in which the indispensable process of digestion takes place. No matter how abundant or healthy may be the roots, or how liberal the supplies of nutriment presented to them, if the leaves be not present to draw it upward and assimilate or *digest* it, growth can not continue—the roots will cease to lengthen, and ultimately perish. This is forcibly demonstrated in the case of trees that have been stripped of their foliage by insects, or some accident; the roots cease to grow; but as soon as new leaves begin to appear, new roots are formed simultaneously: and if one side of a tree be stripped of its foliage, the roots more directly in connection with that side will cease to grow until new leaves appear. In propagating plants from cuttings, it is necessary, in many cases, and indeed in almost all cases where young wood

is used, to leave a certain number of leaves. Cuttings that root without leaves are those of a soft nature, having large cells or sap-vessels full of organized matter or tissue capable of developing roots and sustaining them until the leaf-action commences.

From all this we see how important are the leaves, and how easy it would be by excessive pruning to hinder rather than promote the formation of roots. There is a medium which should be aimed at in pruning, to induce growth after removal. If the roots are much injured, or naturally meagre or defective, a very small number of active buds should be retained, just sufficient to stimulate and sustain circulation of the fluids. In such cases it may be necessary to cut back every young shoot to one or two eyes. Where the roots are abundant and sound, it will suffice to cut out the weak inside-shoots, and shorten the stronger ones about one half. In doing this, a large number of buds are removed, and whatever force there is in the tree is thrown into the remaining shoots, and young wood will be formed where we should have had nothing but leaves if the tree had not been pruned. The growth of young wood always favors the formation of roots. If we examine trees now that were transplanted last spring, we shall find that the roots are in proportion to the number and strength of the young shoots.

The great object in pruning to promote growth is *to direct the sap into a smaller number of channels, and thus increase its force.* If a tree, for example, has 500 leaf-buds to draw upon its sap, and we cut away 400 of them, the remaining 100 will of course receive a far greater proportion than they would have done, and will consequently be enabled to make new wood; and experience teaches us that young shoots with their large cells, luxuriant leaves, and great vital activity, act far more powerfully on the roots than the small, lean foliage of trees merely living but not growing. We know how cutting back acts upon stunted trees. A three or four years old apple or pear-tree, for example, if cut down nearly to the ground, will, in one season, make a growth equal to that of two or three seasons under ordinary circumstances; and this is simply because its whole vital force is concentrated in one point. The sap rushes there, and large cells are formed immediately, in which a rapid and powerful circulation takes place.

All operations upon trees should be performed cautiously, because whatever produces a sudden or violent change in their condition, can not fail to be attended with a derangement of their wisely and beautifully-adjusted organization, and this derangement must be more or less injurious to their healthy existence. Every man who takes his knife in hand to mutilate a tree, should bear this in mind, and weigh carefully the consequences of every cut. We intended to have referred to the opinions of experienced and skillful arboriculturists on this subject, but we can not at present devote more space to it. What we have said will, we trust, induce reflection and observation on the part of some who have heretofore been too indifferent.

Stopping a Runaway Horse.—Around the horse's neck, near the neck-strap, is placed a running knot. To this slip-noose is attached a pair of reins—on gentlemen's horses it may be a silk cord, about the size of a pipe-stem—which may always lie thrown over the dash-board, ready to be seized at once. When a horse starts and becomes unruly, the gentleman takes up this cord and tightens the horse's throat so that he can not breathe. The most furious horse stops almost instantly, but he will not fall or kick.

TRANSPLANTING TREES IN THE AUTUMN.

"Do you approve of fall-planting?" is a question asked us every day. Our answer is, *Yes*, under these circumstances:

1st. When the ground is of such nature and in such condition that water will not lodge around the roots of trees during winter. To plant trees in holes sunk in stiff, tenacious soils, is a certain method of killing them.

2d. The trees should be *perfectly hardy*. All delicate or half-hardy trees should invariably be planted in the spring. If it be necessary to take them up in the fall, they had better be laid in by the roots in a *dry soil*, sheltered from the cold, cutting winds, and, if necessary, protected with boughs of evergreen, or something of that nature.

3d. We do not approve of planting evergreen trees in the fall, unless the very hardiest sorts, and that quite early, say in September or first of October, in time for the trees to re-root, partially, before hard frosts; and they should be sheltered from the sun and wind by a thick screen of evergreen-boughs, well secured around them.

4th. Plant trees *early*—as soon as circumstances will permit after the wood *is ripe*. Don't wait till the leaves fall, but cut them off, being careful *not to* injure the buds. Late planting, however, if well done, may be equally successful. We transplant any time most convenient, between the first of October and first of May. Last winter, in December, we planted several hundred of specimen trees, from one to six years old, and lost not over two or three in the whole. Many of the bearing trees, notwithstanding the drought, have borne and ripened fine specimens of fruit.

5th. Secure all trees from being blown about by the winds, and mulch with half-rotten manure or leaves three or four inches deep.

Asparagus, rhubarb, gooseberries, and currants should all be planted in the fall, and as early as possible. Also, hardy bulbs, such as hyacinths, tulips, narcissus, crocus, crown-imperials, and lilies. It is also the best season to top-dress and renovate neglected trees of all sorts, to make new walks and repair old ones, to lay down turf, and perform such operations as grading, draining, trenching, etc., incident to the formation of new gardens, lawns, etc. Our springs are short, and hot summer weather very often comes too soon. It is therefore well to make a good use of every hour between this time and the freezing of the ground.—*Horticulturist.*

EXPERIMENTS IN FATTENING CATTLE.

We would be cautious in saying or doing any thing to diminish the number of well-contrived experiments in any of the numerous departments of agricultural economy. But we would do all we can to secure the essential characteristics of carefulness and precision in the management of the experiment, and in the statements of facts, and carefully estimate the practical value of the inferences that may be drawn from those facts. It has become, it would seem, a current usage, of late, to adopt certain modes of conducting experiments against which we feel bound to enter our protest, and to invite all who would fairly investigate the questions at issue to think well before they attempt tofound any theory upon results thus attained.

In the feeding of cattle there are such things as *laws of life*—certain principles of physiology, which are and ever must be in constant action, the overlooking of which must lead to conclusions utterly deceptive. Brute animals are subject to these laws as much as our own species. A few illustrations, from what a large proportion of our readers have experienced in themselves, or observed in others, will fully explain our meaning.

Who has not seen peculiar effects follow from an *occasional* indulgence in the use of coffee or strong tea? Yet, when habituated to them, by daily use, no such effects are apparent. Or, feed freely a child, accustomed only to milk, with roast-beef, and who does not know that the services of the family physician will very soon be put in requisition? And still again, who has not seen even alarming symptoms produced by the use of warm cakes, just from the oven, when eaten by those unused to such food? And yet most people eat either and all these things with apparent impunity. And why this difference? Why does our right-hand neighbor at the table indulge very freely in fat meats, without evil consequences, while we, should we indulge in them to one tenth the extent he does, should be helpless in our bed within twenty-four hours? Yet such is not a supposition merely, but a matter of fact. The answer is obvious. One has become accustomed to these articles of diet, and the other has not. The system of the one is not in the same condition as that of the other. The digestive organs of one have learned to manage this or that kind of food, while to those of another they are not familiar, but are nauseating or otherwise positively offensive.

Or, recur to the very animals for whose benefit we write. Who has not learned that when a friend from the country visits you, whose horse has been fed only on hay, or with the addition of potatoes and the like, it is unsafe to give that horse a full allowance of well-dried corn? And yet it is not true that horses can not safely feed on corn. It does follow, however, that many kinds of food are not so beneficial to animals not accustomed to them, as to those which are.

But again, feed a cow entirely on hay, and she will grow fat upon it. But accustom this same cow to one of the richer kinds of feed, till she has acquired the habit of expecting it, and the system is used to it, and then deprive her of it, but still give a liberal allowance of hay, as before, and for a time she will not take kindly this change of diet. For the benefit of those who are uninformed upon this subject, we add, that these are all matters of our own experience or our personal observation.

And what is the lesson they teach? Obviously it is this, that when frequent changes are made in the daily feed of animals, we have not a fair test of what is the legitimate effect of the constant use of those kinds of feed. We do not think a month is long enough to furnish conclusive evidence as to the effect of many kinds of feed now recommended for common use. Such experiments as those which we criticise, are not useless; but they do not show, or rather we do not know that they show, what would be the precise effect of the constant use of such feed, and are therefore unable to say whether this or some other is the more desirable. In a former volume, we published the experiments of a gentleman of Worcester, Mass., whom we personally know to be abundantly qualified to judge of any given facts; but he fed his cows only for one week upon the different kinds of feed, the value of which he wished to test. And what was the result? One cow actually lost flesh upon the same feed on which another by her side grew fat rapidly. And this is just what we should anticipate, provided the animals were previously unaccustomed to eating the feed which was made the subject of the experiment.

Had that feed been continued for three months, the result might have been alike favorable with all the animals, or perhaps appearances would have furnished less satisfactory evidence of the value of the article fed to them, than their effect for a short time on some of the animals would lead us to anticipate.

We are well aware of the difficulties arising from a change in this respect. It would involve the necessity of forming a judgment as to the comparative value of two or more kinds of feed, by the effects produced by them on different animals. But we see not how this is to be avoided, nor scarcely do we desire to avoid it. It would only involve the necessity of trying the experiment on a much greater number of animals. And this is just what ought to be done. The great difficulty in almost all such questions is, that we draw a general conclusion from a very limited number of facts—like foreign tourists who attribute to the citizens of a state or nation the peculiarities which they see in a few with whom they come in contact. We know of a score of foolish persons who believe Friday to be an unlucky day, because they actually know of a dozen mishaps that have occurred on that day. They are not mistaken in their facts, but in their conclusions. So, too, that long list of believers in Mesmerism, Spiritualism, *et id omne genus*, they are not mistaken in what they have seen or heard, but in the theory which they build upon them.

Who has not known, in his own experience, that the temporary use of certain articles of diet are efficient, chiefly in preparing the system to make the most of what is afterward taken as food? Some kinds of food are "loosening;" others tend to costiveness. Some are anti-febrile, others are stimulating; and that diet which corrects any of these abnormal conditions, just prepares the way for a peculiarly favorable action for other forms of food. The system is thus qualified to make the most of them.

So, too, it may be important to note the season of the year when certain practices are adopted. The feed of an animal is necessary, not only to produce muscle and vital fluids, but also to excite animal heat, and that which is best in a cold atmosphere may not be equally favorable in the heat of summer. We imagine that even green grass, if it were used in the depth of winter, would not prove to be exactly the same thing, in its effects, that it appears to be in the heat of summer. And surely a more carbonaceous food is desirable at one season than at another.

Now suppose "four cows," fed upon ruta-bagas, or turnips, or oil-cakes, or any thing else, did accumulate more fat, or give more milk, while eating them for the space of one week—what then?

1. These cows might have been in a condition to be peculiarly affected by the given kind of feed before beginning this experiment; or, 2d, they might be more easily acted upon, favorably or unfavorably, by their feed, than other animals, just as a spoonful of castor-oil will have four times the effect on some persons that it has on others; or 3d, the organs of some of them might be in such a state, or so to speak, the animal might be of that temperament, that the benefit of a given course of treatment might not be fully developed within the few days in which that treatment was pursued; or 4th, the allowance made for a given animal might be too little or too much, and thus the effect of a suitable quantity be still undiscovered. Would the effect of a quart, of a peck, and of two bushels of apples, at one feeding, be the same even in kind? Or 5th, these animals might have a peculiar fondness or dislike for a certain kind of feed, growing out of some past habit or incident—

just as certain accidents have produced a permanent disgust in some persons for a particular dish.

We may be thought to be making prominent some very trivial matters, but wisdom discovered long ago that little matters are the very things that demand attention. It is the "little foxes that spoil the vines," and very often little things only determine the preference to be given to one of two or more good things.

But all these are not little matters. If there is demonstration or any thing like it in these short experiments and isolated cases, then we can prove that fats are a very wholesome diet, that coffee and tea produce hysterics, and that a quart of new rum can be drunk at once with impunity. We can point to the persons whose experience, in one or more instances, bears us out in each one of these statements.

And what then? Why, just this. If you would test the value of any production as feed for cattle, you must give that production,

1. A trial for such a length of time as fully to test the effects of an habitual use.

2. You must wisely plan your experiment, properly proportioning the dry and the wet, the solid and the liquid, the concentrated and the diffused. It does not follow that oil-cake is not *the very best* thing that an animal can eat, because it can not live on that alone. Nor that it is the best, because it can live and thrive a week without any thing else. With proper feed in connection with it, it may be the most efficient of any one thing, though the animal would die even if fed on it exclusively. And its effects for a few days may prove to be as favorable as a gill of spirits to persons in a condition that requires such medicine.

3. You must test these effects by feeding a large number of animals.

4. You must have regard to the point to be reached. This may be either the production of muscle, of fat, of milk, of activity, spirit, etc., etc.

FLAX CULTURE AT THE WEST.

One of the most important and modern establishments for the interest of the Western farmer is that of the "Dayton Flax Company," the object of which is to dress flax upon an extensive scale by the *Buchanan process*. The works are situated about one mile east of the centre of the city, and are now rapidly approaching completion. Messrs. Thos. Kimber, Jr., and Chas. Hartshorne, of Philadelphia, are the managers or proprietors of the patent for the United States. J. A. Grosvenor, Esq., is a proprietor and the manager of the Dayton establishment. Mr. G. is a very intelligent, thoroughgoing, practical gentleman, who has had much experience in the growing of flax and manufacture of oil. In securing his services I think the company were extremely fortunate. I was not a little surprised at seeing the accumulation of such mountains of flax-straw. The yards and buildings now contain upward of 2000 tons, and yet this is hardly half of what is to come in the present season. The straw is neatly put up in stacks or ricks. *Four* of these ricks are now completed, each of which is 200 feet long, 40 feet high, and 30 feet wide at the bottom. This flax is mostly the produce of

three of the adjoining counties. The company pay $10 per ton for all the flax-straw that comes to them straight and bound, and $5 per ton for the broken.

Mr. Grosvenor informed me that he would probably raise steam and commence operations in the course of the next month, when he has promised me he will send you some account of his success.

There is now cultivated and grown in Kentucky, Indiana, Illinois, and other Western States, *tens of thousands of tons* of flax, for the seed alone, while the fibre is now suffered to go to waste, which, if dressed, would find a ready market at remunerating prices in our own country, and England would gladly buy from us as much more.

I hope the success of this enterprise may encourage the capitalists of Kentucky and Indiana to erect similar establishments in their respective States.

POT-CULTURE OF THE VERBENA.

As the verbena merits a place, and most justly, among popular florists' flowers, perhaps a few hints on its cultivation in pots may be acceptable to those who have not hitherto adopted that mode of culture. I know of no plant more useful or ornamental, as a pot-plant, for decorating the greenhouse during the summer season, when the proper inmates of that structure are enjoying the open air. I do not know if my system of propagating this favorite be new; but as it is simple, certain, and expeditious, it may be as well to state how I proceed from the commencement. I fill shallow pans (such as are used for placing under flower-pots) to within a quarter of an inch of the top with silver-sand, and pour in water sufficient just to cover the sand. I then make the cuttings in the usual way, and push them into the wet sand; put the labels to them, and place them in a hot-bed frame where the heat ranges from 65° to 70°, always keeping the sand wet. The advantages to be realized by propagating the verbena in this way are, that the cuttings never require to be shaded in the brightest sunshine, consequently the young plants are not drawn up long and lanky; the cuttings never stop growing from the time they are put in until they are ready to pot-off, which is in about six or seven days, when they may be drawn out of the wet sand, with a bunch of roots, without injuring a single fibre. The best time to commence operations for growing specimen verbenas in pots is February, or as soon as vegetation commences for the season. It is desirable to pot a few of the best autumn-struck plants for the sake of early bloom; but they never make such handsome specimens, nor continue so long in good health, as plants raised from cuttings in spring. As soon as the cuttings are well rooted, they should be potted into three-inch pots, and placed in a gentle heat for a few days, until they are established in the pots; then top them, and harden them by degrees; never allow them to remain long in heat after they begin to grow, or they will form long naked stems. As soon as the pots are filled with roots, shift into six-inch ones, and from these into eleven-inch pots. During the growth of the plant, all shoots must be stopped, in order to cause the plants to grow bushy; and never allow them to flower until the plant is properly formed, and has as many leading shoots as are wanted. The compost in which I grow the verbena is, equal parts of turfy loam, leaf-mould, and peat, with a little silver-sand added, to keep the soil open. I water twice

a week with liquid manure, and occasionally syringe over head with clean water to cleanse the foliage. If the saving of the seed is no object, all flowers ought to be cut off as soon as they begin to decay. I need scarcely add, that the grand secret in the successful culture of this, as well as of all plants, is efficient drainage; without this, no plant will continue long in good health. If green-fly should attack your plants, fumigate with tobacco; for if the fly once gets ahead, the plants will never recover sufficiently to give satisfaction. Mildew is another enemy which must be looked after. As soon as it is perceived, dust the plants with a little sulphur, which will stop it from doing much mischief.—*Gardeners' Chronicle.*

ANOTHER SPECIMEN OF FARMING.

A WRITER in the *New-England Farmer* says: "I bought my farm of 100 acres in Sterling, Mass., about ten years ago, for a little more than $2000; it is now worth $2500. The stock and tools may be worth $500, making the present investment about $3000. I keep one man in the summer, and a little boy in haying. I can do but little work on the farm myself, say thirty or forty half-days in a summer. I pay in wages, exclusive of board, about $150 a season. I generally keep seven or eight cows, mostly pretty good, but one or two heifers are farrow, so that the lot is no more than an average one. One yoke of oxen and a cheap horse serve for a team. I cut about 16 tons of hay (or 29 in a good season) from 25 acres of mowing, and this, with my corn-stover, straw, etc., keeps my stock.

From the above description, you can conceive that my profits can not be immense; yet, on summing them up, I see no reason to complain: and my inference is that farming must be a good business when well conducted, since I am able to live by it with rather poor management. Recollect, the investment is about $3000, the interest of which is $180.

From my 7 cows I sell 700 lbs., at 23 cts., (in firkins,) -	$161
I can raise 200 bushels of corn, and from that, and the dairy, etc., can sell pigs and pork, - - - - - -	150
I sell about $40 worth of apples, - - - - -	40
Potatoes, - - - - - - - - - -	50
Beef, - - - - - - - - - - -	30
Poultry and eggs, - - - - - - - - -	75
Total, - - - - - - - - -	$505
Wages, taxes, and insurance, - - - - - -	170
Profit, - - - - - - - - -	$336

Beside this, should be reckoned the support of my family from the farm, for we buy little except clothing and groceries, and we live more comfortably than we could in a village for $500, or in a city for $1000. I put the wear of tools and buildings, and my own labor, against the improvement of the farm, by trees and otherwise, which is not less than $50 annually. So that I can not make the profit of the farm (all expenses paid) less than $336 annually, beside our living, which is doing pretty well for $3000 investment, and poorly managed at that.

I have no doubt that a skillful man, with a little extra capital, might make

the farm pay at least double the above profit; but it will help a man to judge of what a good farmer can do, to know what is done by a poor or middling one.

We contrive to raise a couple of heifer-calves a year on skim-milk, and though hay here is worth $16 a ton, I find it is the cheapest way of keeping up my stock of cows. Also, notwithstanding the present high prices, I can not afford to 'sell off most of my hay and stock,' for my butter, at present prices, makes it profitable to keep them. My farm is more than fifty miles from Boston by the railroad, and yet is near enough."

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

DRYING FRUIT, AND DRY-HOUSES.

MESSRS. EDITORS: My attention has recently been called to an article in your Magazine, copied from the *Country Gentleman*, with reference to drying fruit by a new machine. As is intimated in that article, fruit-drying is becoming a very important branch of domestic economy. The ordinary process of drying apples and peaches is not very profitable; neither is the fruit very good after it is dried; for when dried on scaffolds, etc., it is subject to the visitations of flies and other things, and is also exposed to the weather and rain. For the want of proper dry-houses, many thousands of bushels of apples are lost annually. They, and peaches also, rot upon the ground and on the trees. Now, if we can get up a dry-house which will dry apples and peaches thoroughly and quickly, it is just the thing we want. Can we do it? Yes. And how? First, build a cheap and durable building, and inside of that building place a brick arch, or foundation; upon which place a stove, and around the stove build a large square box, which should run up to the chamber-floor of your building. This box, which surrounds the stove, is the channel through which the heat passes up into the chamber, where is situated another much larger box, (say twelve feet square and nine feet high,) which is the drying-box. In and around this large box are placed the drawers, with twine-sieves for their bottoms, and the meshes of the sieves as large as they can be made without the prepared apples falling through them. These drawers are taken out and put in from the outside of the large box, of course. Draw them out, fill them with your prepared apples, shove them in again, and your drying process goes on nicely, and without your being apprehensive of your apples getting wet with rain, or getting besmeared with flies, etc. The apples dried in this cheap and simple apparatus are clean and white, and will keep a great while, while they will command a great price in the market. They are also high-flavored, and free from defects. In the top of the drying-box should be placed ventilators, through which the surplus heat will escape. To regulate the heat in the box, you only have to close or open the ventilators, and your work is done.

You can build this kind of a dry-house in almost any old building with a chamber to it, so that you can go up stairs to pull out the drawers, etc. With the improved paring-machines and coring apparatuses, which are becoming quite common in the country, persons having many apples to work up can get along rapidly with the business, and have a profitable kind of work for rainy days, beside. Three bushels of good apples will make one bushel of dried fruit, which generally commands in New-York city, if a

good article, not far from $2 per bushel, in the winter season. And as to dried peaches, they always will command a high price in almost any market. They usually sell at from twelve to eighteen cents per pound, which is a very fair price for them, since, in fact, they can be raised and dried much cheaper than raisins and other fruit of a like nature. In this vicinity, (Central New-York,) we can raise peaches with comparatively little trouble; and why would it not be a good business, Messrs. Editors, to dry them and send them to your mammoth market?

I know of a gentleman who is now engaged in drying apples for your market with the kind of drying-house which I have described. His apples are nice, and he says he finds no difficulty in disposing of them at living rates at any time.

I neglected to mention that the drawers should be about twenty inches wide and three feet long, or longer if thought to be necessary.

Now, Messrs. Editors, I hope that some of your numerous readers will try this dry-house this winter, for there is much fruit in the country in the winter season which might be profitably treated in this manner.

This season, I have sold a great many peaches at four shillings per bushel, while many have rotted. Now, if these peaches could have been dried, they would have undoubtedly paid for the labor. So we may say of apples, and other fruit.

The fruit-raising business is becoming more and more common every year, and it is to be hoped that people will pay a respectful amount of attention to it, as vegetable matter is more wholesome than animal flesh. There are numerous avenues in almost all parts of the Union for the sale of fruit, whether green or dried, though the latter is the safest to deal in. Then let people dry more fruit than they have been in the habit of doing, and thus supply a want which has beeen growing for a long time.

Very respectfully, W. TAPPAN.

Baldwinsville, N. Y., Oct. 20, 1854.

WILL RUTA-BAGA PAY TO FEED?—Having occasion a few days since, to feed a pair of large oxen, and having a lot of ruta-bagas on hand, I tried the following experiment. I commenced in December, when the oxen weighed 3800 lbs. I fed them one week with hay and three bushels corn-meal at 75 cents, $2.25; increase, 25 lbs. The second week, I fed them one and a half bushels meal and nine bushels ruta-bagas; with this they ate very little hay; increase, 50 lbs. The third week, fed the same as the first; increase the same, 25 lbs. The results stand thus:

1. 3 bu. meal, $2.25		gain 25 lbs., at 6 cts.,	$1 50
2. 1½ do. do.	$1.12	gain 50 lbs. at 6 cts.,	3 00
9 do. ruta-baga, at 21 cts.			
3. The same result as the first.			

I continued to feed according to second experiment, and never saw oxen take on flesh faster, and become sooner fit for the butcher. Be careful always to feed clear meal two or three weeks before slaughter, as otherwise the beef may have the flavor of the bagas. My bagas cost me to raise about six cents a bushel. Cattle never cloy on bagas, and I conceive them to be the only root that will pay for raising to feed. All stock like them; I think them worth more than potatoes by the bushel, as they never scour as potatoes do, while four bushels of bagas are as easily raised as one of potatoes.—*Country Gentleman.* G. W. P.

SOLIDIFIED MILK.

We find in the *Medical Monthly* for October, a description of the process for producing this substance:

"To 112 lbs. of milk, 28 lbs. of Stuart's white sugar were added, and a trivial portion of bi-carbonate of soda, a teaspoonful, merely enough to insure the neutralizing of any acidity, which in the summer season is exhibited even a few minutes after milking, although inappreciable to the organs of taste. The sweet milk was poured into evaporating pans of enameled iron, imbedded in warm water heated by steam. A thermometer was immersed in each of these water-baths; that, by frequent inspection, the temperature might not rise above the point which years of experience have shown advisable. To facilitate the evaporation, by means of blowers and other ingenious apparatus, a current of air is established between the covers of the pans and the solidifying milk. Connected with the steam-engine is an arrangement of stirrers, for agitating the milk slightly while evaporating, and so gently as not to *churn* it. In about three hours, the milk and sugar assumed a pasty consistency, and delighted the palates of all present. By constant manipulation and warming, it was reduced to a rich, creamy-looking powder, then exposed to the air to cool, weighed into parcels of a pound each, and by a press, with the force of a ton or two, made to assume the compact form of a tablet, (the size of a small brick,) in which shape, covered with tin foil, it is presented to the public.

Some of the] solidified milk which had been grated and dissolved in water the previous evening, was found covered with a rich cream; this, skimmed off, was soon converted into excellent butter. Another solution was speedily converted into wine-whey, by a treatment precisely similar to that employed in using ordinary milk. It fully equalled the expectations of all; so that solidified milk will hereafter rank among the necessary appendages of the sick-room. In fine, this article makes paps, custards, puddings, and cakes, equal to the best milk; and one may be sure it is an unadulterated article, obtained from well-pastured cattle, and not the produce of distillery slops; neither can it be *watered*. For our steamships, our packets, for those travelling by land or by sea, for hotel purposes or use in private families, for young or old, we recommend it cordially as a substitute for fresh milk."

The committee of the Academy is to make its report at an early meeting. The milk, being prepared with sugar, is a little too sweet for those who prefer to take no sugar in their table drinks.

Cranberries on High Land.—Mr. Elias Needham, of West-Danvers, has shown us some cranberries grown on high land, which are of good size, and which, he says, he produces with good success, having raised some one or two hundred bushels a year, and selling them for $3 and $4 a bushel. We have heard his experiments favorably spoken of by his neighbors, and can have no doubt that he finds an ample reward in the crops for all cost and labor. Here, then, is the example; why can not others copy it, and produce this wholesome and palatable food, so that it shall become common on every table?—*N. E. Farmer.*

ANNUAL AGRICULTURAL FAIRS.

MANY of these very useful appointments have already taken place, and the results are before us. A few yet remain in the future. We have been accustomed to give a detailed account of some of these heretofore, though of late we have omitted to do so. We have our reasons. So far as the mere recital of the premium-list is concerned, or the publication of meritorious articles exhibited, the labor is almost useless. It gratifies some friends, and others who are interested in these proceedings. And so far as it is an advertisement of a good article, good may result. And though every man should be willing to pay for advertisements, whatever their form may be, we are willing to do *the public* such service, and even the parties in interest, if it does not cost us too much. But were the reports of our committees *what they ought to be*, we should have abundant material for all our periodicals, without recurrence to useless catalogues, or mere lists of premiums. Most of the New-England Societies require statements of the processes employed by the competitors for premiums; and when these are properly condensed, and the merits of each are discussed as they should be, then it would be proper that every journal in the land, even the political and religious, should aid in promoting their general circulation. But, unfortunately, in many cases these reports are confined to the fact that A's butter is better than B's, and C's cows better than D's. And what do the public care for all this, except so far as, in some cases, they thereby are informed where good stock or good machines, etc., may be bought. So far, a general publication is expedient.

We have prepared a short abstract of what we deem most interesting to the public in general, from the reports of various Fairs, or from our own observation. So far as the latter means of information are concerned, we can speak only of three State Fairs—those of New-York, Pennsylvania, and Maryland. But we shall not make these more prominent on that account, but shall govern ourselves by the policy just indicated.

As a general remark, we should doubt whether these exhibitions have quite reached the average standard of merit, or of general interest. This fact is no doubt attributable, in some degree, to the effect of drought during the summer, and still more to unfavorable weather at the opening of the show.

THE NEW-YORK STATE FAIR was not remarkable for any thing except for Bulls. The show of these was very fine. Horses were very numerous, and a few of them were noble animals. Blood stallions, mares, and foals were exhibited. Among these were Mr. Morris's imported English stallion, Monarch, now aged twenty years; Mr. De Mott's Trustee, chestnut, also imported from England, and now aged twenty-five; and Mr. Burnham's chestnut mare, Molly Stark, with some of her numerous progeny, consisting of a chestnut colt, aged 4 years, by Tornado—a beautiful animal; a two-year old, and a yearling foal.

Of the younger stallions, from other States, and Canada, was Young Liverpool, a beautiful four-year old bay, bred by Truman Derrick, of Canada. This appeared to be "a worthy scion of a noble stock," the sire being Leopard, got by Liverpool out of Sneaker by Camel, (the sire of Touchstone in 1834, and Launcelot in 1840, both winners of the great St. Leger stakes at Doncaster, England.) Queen, the dam of Young Liverpool, was also thoroughbred, being sired by Monmouth Eclipse out of dam by Durock. Mr. Derrick had also two first-rate trotting stallions on exhibition—Young Norman, four

years old, and Young Bashaw, three years old, each combining the points requisite for speed, strength, and endurance.

A fine gray stallion was exhibited by Mr. Harrington, of Bennington, Vt., which was sired by Hamiltonian, a celebrated Vermont horse, dam sired by Comet, Comet by Bishop Hamiltonian, Bishop Hamiltonian by imported Messenger—making Mr. Harrington's horse two crosses from Hamiltonian and only three from Messenger, and half-brother to Hero, Mountain Maid, and other Eastern-bred trotters of celebrity.

A team of three splendid dray-horses, of dark-bay color, and of enormous size, belonging to Adams & Co.'s Express, and brought here from Boston, were much noticed for their gigantic and symmetrical proportions, as well as for their extreme docility, obeying the directions of the driver without any control by whip or rein. Our opinion is, and we feel quite competent to have an opinion on this subject, that the dray-horses of Boston alone would make a greater show than New-York State has yet seen at any one exhibition.

There was quite an extensive show of mules, some of which must have exceeded fifteen hands in height, and were strong, powerful animals, driven in teams of eight, six, and four. Swine, too, were good. Sheep, ditto, etc. But in milch-cows, and in oxen, many a New-England county show we have seen would excel this. So, too, in fruits and flowers. The most respectable show of fruits was from Hovey & Co., of Massachusetts, who made a very good exhibition of pears. The dairy was not well represented: nor the vegetable garden. Agricultural implements were there in great numbers, but few of them were new.

The following is a novel exercise on such occasions. It *may* be useful, though we do not see how:

Spading-Match.—A spading-match came off at the same time with the ploughing-match. It excited no little interest and merriment. The following persons entered:

Daniel Norton, Morrisania, Irish, aged 21 years.
Michael Skivington, Morrisania, Irish, aged 22 years.
John Base, Morrisania, German, aged 20 years.
John White, Morrisania, English, aged 28 years.
Wm. McCoy, West-Farms, Irish, aged 35 years.
Joseph Fitzgerald, Morrisania, German, aged 27 years.

The space to be spaded was 20 feet by 10 feet wide, and to be spaded 10 inches deep, the work to be accomplished in an hour, and like spring-work. There were three premiums to be given—a silver cup, $10; ditto, $8; medal, $4. The competitors worked like good fellows, and amid repeated plaudits. The time varied from 42 to 51 minutes. The first prize was awarded to John Base.

The South-Western Agricultural and Mechanical Association.—The first day of the Fair was called the ladies' day. It was devoted chiefly to the exhibition of manufactures of woollen, cotton, and silks, in which the genius, the handicraft, and the patient perseverance of woman so wonderfully excel. The number of entries in this department was perhaps not quite so great as last year, but the display was full as beautiful.

The second day was taken up in the exhibition of fruits, flowers, vegetables, farm productions and farming implements, carriages, castings, and manufactured wares.

The agricultural implements were the greatest wonder if not the greatest

attraction of the Exhibition on the third day. While surveying the numerous labor-saving machines, says the *Louisville Journal*, which Yankee ingenuity has devised for agricultural purposes, we were led to institute a curious comparison between the farm utensils of this country and this age and the rude and simple tools which were used by the tillers of the soil in the earlier times of civilization and at the dawn of husbandry in Western Europe. Many of such rudely-fashioned implements are still in use in some countries, both of the old and new world, and invariably wherever we find them, we find ignorance and political darkness, a clinging to old remnants of despotic or feudal power, a degraded people, and a corrupt and tyrannous government. In no one feature is the progressive genius of the people of the United States so significantly manifested as in inventions for the benefit of the masses. In the contemplation of such inventions as were presented at the Exhibition yesterday, we saw unmistakable evidences of a free people, of light and knowledge, of an independent and ambitious spirit, of energy, and strength, and genius among the masses, which can only exist where all men are politically equal, and each is in himself a part of the great popular sovereignty. So long as our country is governed only by the principles upon which our State and federal constitutions have been based—so long as we, the people, hold in our own hands the reins of government, this inventive genius will continue to excel, and American inventions will ever deserve the premiums and defy competition in any World's Fair.

Among the cattle exhibited were some of the finest we ever saw. The bulls "Lord John" and "Grand Master," and the cow "Forget-me-not," exhibited by Mr. R. A. Alexander, of Woodford county, were in every respect prize animals. The cattle sired by "Perfection" were decidedly excellent. For fine cattle, Woodford carried off the palm, and Bourbon, Henry, and Shelby contended admirably for the majority of the prizes. Jessamine and Fayette seemed preëminent for fat cattle. Bourbon proved herself as remarkable for prize-hogs as she has long been noted for the best whiskey—and Indiana excelled in fine-wooled sheep. There were several noble-looking draught-horses exhibited, and Jefferson and Louisville obtained a good share of the premiums in that line.

Notwithstanding the lowering aspect of the sky and occasional showers, the day passed off delightfully. Many thanks are due to the indefatigable officers of the Association, for their complete and systematic arrangements, enforcing strict and excellent order, but not less for their cordial hospitality, urbanity, and unremitted attentions to their guests.

CONNECTICUT STATE FAIR.

This Show proved to be very successful. The show of imported stock is pronounced to be excellent; that of working oxen is said to have equalled any in the country. There was a fine display of matched pairs of horses, in a great variety of vehicles. Conspicuous among the double teams was one of five pairs of stout workers from the quarries of Portland—a good match for the ox-team from the same place. There is a splendid team of four black horses, heavy workers, from Waterbury. There is a larger and better show of pairs than at New-York, though none equal to the best.

After the double teams, came a fine trial of speed between the fast trotters,

about forty in number. After the general trot, seven of the best were called out, and timed, and trotted a mile in 2.55½, 2.59, 2.59, 3.20, 2.57, and two broke. Several other trials of speed took place, very much to the gratification of the crowd, not only within the inclosure, but upon every house-top and tree commanding a view of the course.

The show of horses was greater than at New-York, and, in respect to those of all work, superior. In high-blooded stock, not equal.

The show of Devons, by Mr. Hurlburt, of Winchester, Litchfield county, would be hard to beat.

THE NEW-ENGLAND HORSE-SHOW.

This Exhibition, held at Brattleboro', Vt., appears to have been very successful. The entries comprised above one hundred and fifty animals, four fifths of which were different varieties of the Morgan breed, the Black Hawk predominating. There have been exhibitions in which a greater number of animals have been presented, but none, perhaps, in which the value of the stock has been exceeded. Five thousand dollars were to-day refused for either of two magnificent horses which were on the ground. This morning, half a mile, at the rate of 2 min. 14 sec. per mile, was made by a mare belonging to Mr. J. L. Briggs, of Springfield, Mass. A mare belonging to Mr. Twitchell, Superintendent of the Boston & Worcester Railroad, also made most excellent time. The afternoon was devoted to testing the qualities of horses aged and designed for all work, and those of seven years and under, by the rate of speed. None of them made quicker time than that recorded above. The attendance on the ground was liberal.

The afternoon of the second day was devoted to a trial of speed of the various animals present, and thirteen geldings and mares were entered for competition. The following is the best time made during the trial: Missessque Belle, of old Nimrod and Messenger blood, four years old, owned by A. N. Stevens, of Endsburg, trotted half a mile in one minute and twenty-nine seconds; Abdallah, mare, six years old, owned by J. L. Briggs, of Springfield, Mass., one minute and thirty-two seconds; Lady Besworth, by Rattler, four years old, owned by H. H. Thaxter, of Rutland, one minute and twenty-eight seconds; Nelly A. Sherman, Morgan, eight years old, owned by George R. Orcutt, of Middlebury, one minute and twenty-nine and a half seconds. The above four then trotted for the superiority, which was gained by Nelly, who made the mile in two minutes and forty-nine seconds. Lady Besworth came in second, the Briggs mare third, and Missessque Belle last. The premiums were $50, $25, $15, and $10. These matches were very exciting. Flying Morgan, owned by Mr. Adams, of Burlington, trotted a match against time, making the mile in two minutes and fifty-four seconds. Two Black Hawk and Morgan colts, each three years old, owned by Mrs. Hatch, of Bethel, and Grosvenor, of Bridgeport, trotted a mile, the former in three minutes, and the latter in three minutes and three seconds. A pair of mettled horses, respectively four and five years old, owned by Mr. C. G. Lawrence, of Brattleboro', made a mile in three minutes and seventeen seconds.

BABY-SHOW AT SPRINGFIELD, (O.)

Our Springfield (O.) friends are duly noticed by the press, in their efforts to improve the breed of babies. The correspondent of the *New-York Times* says:

"The National Baby-Show took place at Springfield to-day, and one hundred and twenty entries of babies were made.

A letter was received from 'Fanny Fern,' and read for the edification of all concerned.

Letters were also received from Mrs. Swisshelm, Mrs. Crittenden, Mrs. Mott, and Horace Greeley, Esq.

Mr. Greeley thought that much attention should be given to the development of the human constitution, in a country where able-bodied men sold for five hundred to fifteen hundred dollars a piece.

Mrs. Mott thought that black babies should have been admitted to this exhibition and had an equal chance with the whites.

Among the exhibitors was an old woman who came with her seventeenth child. She claimed a premium on that ground."

Another editorial notice contains the following:

"The baby-show at Springfield, Ohio, has puzzled some people amazingly. What was to be achieved by it was a great question, and probably while every proud mother thought how her chubby little one would loom up among the multitude of its own age, like Saul among the prophets, or Cupid among common boys, as the finest by all odds, and deserving of all the premiums, yet most of the childless thought it a very silly affair for men to go into, and even doubted whether it would tend to increase the stock of existing delicacy, or be likely to help men's morals.

It did some good, however, we doubt not. It gave four handsome premiums to as many promising children, which we hope will not turn their heads, when they are old enough to be turned. By the way, these little ones coming so early before the public, are a kind of public property, and we should like to live long enough to note how they turn out. Their mothers should instruct them that, though it is very proper for an awarding committee to pronounce one 'fine' at six months, the wise man of Greece thought none should be pronounced 'good' until they have passed the last bridge of life.

We hope another good will come of such amusing convocations; that children will be recognized as possessing rights. The common doctrine is, that a child has no right to sit in meeting. But why has not a bright-eyed baby the same right to look up in a minister's face at church as for a stupid old over-fed man to lie dozing and nodding in his presence. Why has not an innocent one-year-old as good a right to cry in a place of amusement as for a strapping b'hoy to munch peanuts and cry 'hi! hi!'? Why has not 'Young America' in bib and frock, as good a right to crow or cry in a rail-car as the coarse fellow in the next seat to make puddles of tobacco-juice on the floor, or a vulgar fop to mouth great oaths openly? It may not be in taste for mothers to take their little ones unnecessarily into the haunts of men, but, in there, whether of necessity or not, they have their rights, which we hoped such shows would tend to maintain.

The Springfield affair did some local good, no doubt. It brought in much

company to the city, helped the hotels, improved the milk-trade and did good to the venders of toys, made a topic for the papers and advertised the fathers of the fair."

We copy a part of a very readable report, which we find in the *Cincinnati Times:*

"The managers of the 'show' appeared to be taken aback at the interest taken in the affair. Devoted mothers and doating fathers, with their little pets in their arms, came pouring into the Fair grounds, each, no doubt, confident of leaving it with one of the prizes. A small canvas tent had been assigned as the receptacle of the entries, and into that, mothers, babies, and nurses were ushered by gentlemen wearing rosettes upon their breasts. Soon there was 'music within.'

Astonished, probably, at finding themselves in 'mass meeting assembled,' the little ones set up a cry which shook the canvas-top and pierced the ears of the people. In vain did the brass band toot their instruments, to drown, if possible, 'the piercing cry.' *Young* America was aroused, and scorning to be beat, sent forth notes which shamed the keys of the bugle and made the trombone blush for its weakness.

The tent presented a novel, amusing, and interesting sight. The mothers and nurses were seated, and had the 'little darlings' all ready for inspection, that is, as near ready as could be. To see so many babies together was novel; to note the maternal efforts to present them in the best mood was amusing, and to gaze upon their innocent faces and purest charms was certainly interesting.

There sat a mother, her eyes directed alternately on the judges and on a little cherub which lay in her lap. By her sat another, holding up proudly a lovely little girl, whose flaxen curls and sweet blue eyes would soften the heart of the greatest baby-hater in Christendom. Next to her a nurse was endeavoring to quiet a stout, black-eyed, rosy-cheeked 'one-year old,' who insists on pulling the jet black ringlets of another one about its own age. One lady pointed with pride to the chubby legs of her darling boy, while another glowingly refers to the delicate but well-formed features of her sweet babe. One boasted of having the largest of its age; another of the smallest and smartest. Some of the babies seemed to feel their importance on this occasion, and, in spite of the most earnest entreaties, would be in mischief, and keep up a continual noise. Others appeared unwilling to 'believe their eyes,' and lay quietly in their mothers' arms, watching the proceedings with apparent interest, while others insisted on hiding their innocent faces in their mothers' bosoms, as if they knew their refuge was there.

Then the expressions which fell on one's ear! 'Tome to mudder's arms, mudder's 'ittle pet.' 'Oh! you darling 'ittle toad!' 'B'ess its 'ittle heart, it shall have some tandy.' 'Tot, tot to Baridyboss, on its mamma's 'ittle hoss.' 'Stan' up, muzzer's 'ittle pet.' 'It's sweet, so it is, mudder knows it is.' 'Dump if it wants to, tause it tan dump.' 'Tiss mamma now, won't it tiss mamma?' 'Bouncety bounce, bouncety bounce.' 'Now what a naughty boy; see, the gentlemen are coming.' 'That's a good baby—nurse can tome its hair, an' it don't try a bit.' 'Sweety, sweety, mother's sweet,' and an hundred more just such expressions.

One hundred and twenty-seven babies were entered for exhibition. And they came from almost everywhere.

The judges were a long time in their investigations. After they retired, the mothers, with their children in their arms, walked into the Floral Hall, where they remained, while the spectators crowded past them to take a look at the babies. This ended the great baby show.

Great dissatisfaction was expressed at the award of the first prize. It was even proposed to take up a subscription on the spot, to purchase a gift worth at least as much as the prize. It was understood that her claim had been strongly urged, and that the prize was awarded to the other child by a majority of only one vote.

Those in the minority were determined she should not pass unnoticed, and after the award had been made known, waited on the little favorite, and through Mr. De Graff of Dayton, presented her with a large and costly statuette of our Saviour blessing little children. This act was highly applauded."

It has been suggested, in one of our exchanges, that this committee are little aware what enemies they will have to encounter hereafter, in the one hundred and twenty-six disappointed mothers.

PORTLAND (ME.) MECHANICS' EXHIBITION.

THIS is reported as very successful the present season. Among the objects of especial interest in the department of labor-saving machinery, the *Portland Advertiser* describes the following:

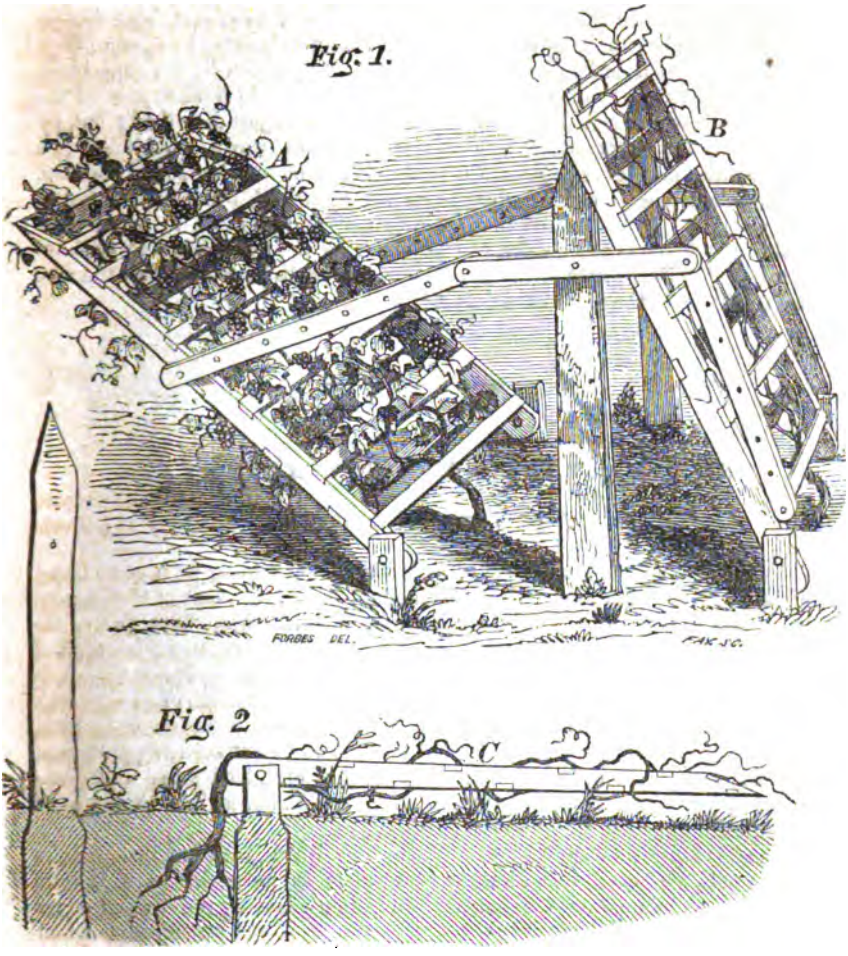
"We were much interested in the operation of Vogel's Patent Loom Harness Maker, entered by Warren, Pennell & Co., Saccarappa. This machine performs a work which until quite recently was a very slow hand process. Formerly a single hand was expected to make two thousand loops a day. Four of these machines may be tended by one girl, and they will make forty thousand loops a day. The thread of which they are manufactured is drawn from spools set on revolving tables, twisted in pairs, braided at regularly recurring intervals, and wound on a cylinder, which is moved horizontally by proper gear. The braiding forms the necessary loops, and is the result of the ingenious action of a *cam*, which causes the spools to change tables and cross each other. It is a wonderfully ingenious machine.

George Copeland, Lewiston, has entered a loom for weaving seamless-bags. It is an improvement on a similar loom, inasmuch as it makes use of *two* shuttles, by which, and a corresponding adjustment of the several parts, *twilled* cloth is produced. It will turn out a common grain-bag in seven minutes, forming a perfect bottom. It is a machine of great value and ingenuity of construction."

Beside these, we notice two shaping and planing-machines, a cotton-drawing frame, and a cotton-carding engine, all from the Saco Water-Power Company; a rotary-cutting cylinder planing-machine; a blind-shade planing-machine; a saw-filing machine; Edson's double-acting force-pump; a card printing-press; washing-machine; and many other equally useful pieces of of machinery.

The display of paintings is large, and very favorably spoken of. The *State of Maine*, of Monday, says that the Exhibition thus far met with a success surpassing the expectations of its managers. We feel pleased to record this fact, as it shows that there is a proper feeling on the subject of the mechanical skill of our State, and that an interest has been awakened that will hereafter do much to improve and elevate the science of mechanics.

We shall refer again to this Exhibition.



CROSS'S PATENT GRAPE-FRAME.

The annexed figure represents one of the many forms of the grape-frame for which a patent was granted to S. Oscar Cross, of Sandy-Hill, Washington county, N. Y., on the 27th June, 1854. Fig. 1 is a perspective view, and fig. 2 is a vertical section, showing how the frame can be lowered to the ground for any desirable purpose. Frame A represents a view of grapes grown whilst the frame rested against the posts, and now partially depressed, exposing the fruit to the sun, and bringing the foliage underneath. Frame B shows how the vine is secured within it. C represents the frame as the inventor designs leaving it until the grapes get their growth.

The advantages claimed by Mr. Cross from the use of this frame are, that the vine thus shades and enriches the ground; the rose-bug is not so injurious to fruit and foliage; it is not as liable to mildew; it is not as exposed to blasting winds; it sets in greater abundance; grapes grow larger and faster,

as they receive warmth from the earth, consequently the fruit ripens earlier in the season. In this position it is easily covered to protect from winter-killing; and it can be lowered to this position to protect the grapes from early frosts. It is easily elevated, and held in any position by the supporters. It was designed by the inventor that the frame B should have supported the vine in fruit, which would have given it the appearance just described; but, by an error of the engraver, the fruit is represented as grown, when the frame was elevated and turned against the posts, instead of in a horizontal position. The frame is easily made, wall-strips, or other material, being used to fasten the slats to. If but one set of slats are used, and the vine is not secured within the frame, a few strings will secure it to the frame when its position is reversed. Foot-pieces on the short posts can be dispensed with, as the vine itself will secure the foot of the frame.

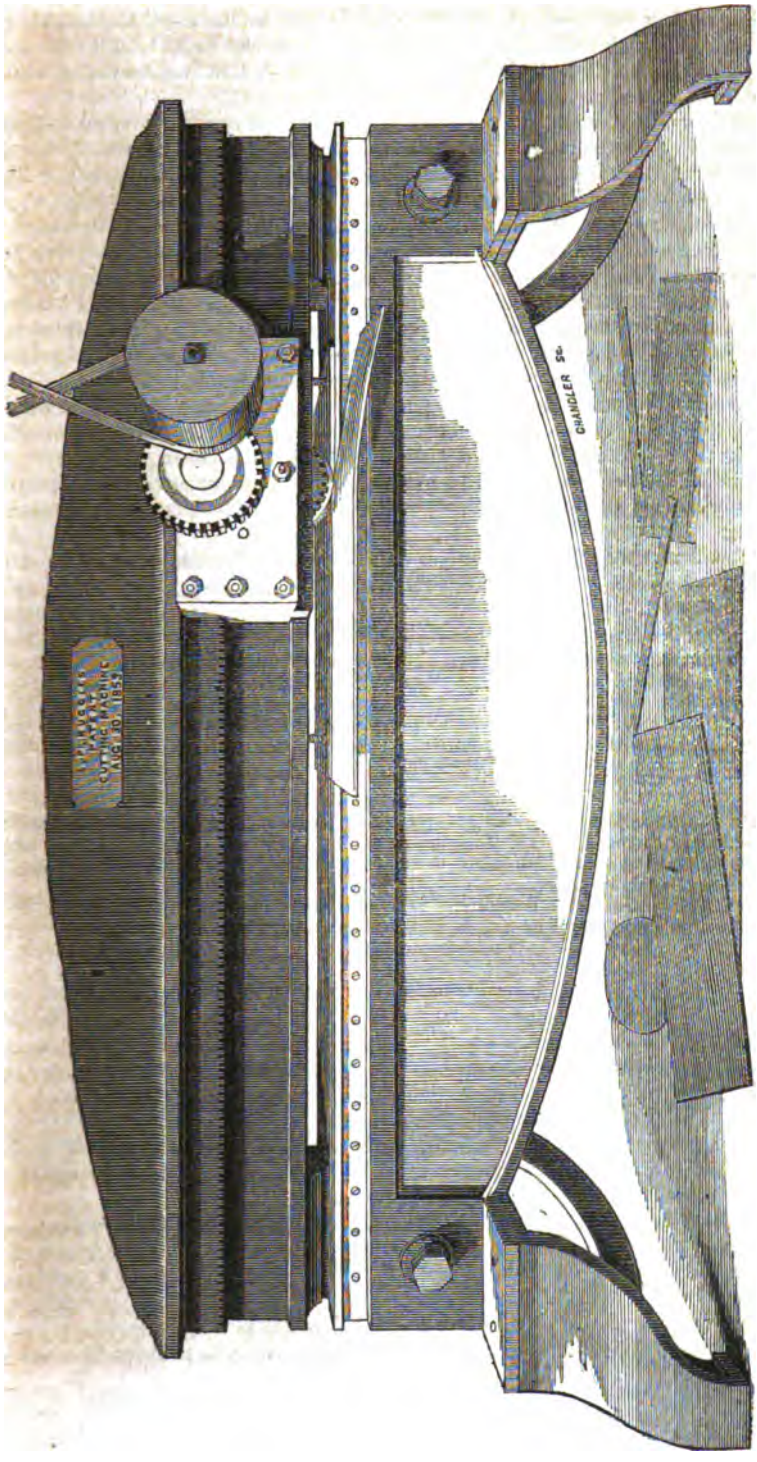
NEW MACHINE FOR CUTTING METALS.

S. P. RUGGLES' PATENT.

THE true method of cutting iron, and thereby extending its uses to many of the arts, has been discovered only since the commencement of the present half-century, and by an American inventor. Until within four years, the colossal power-shears, or jaws, have been the greatest practical triumph of mechanics over the rude efforts of the sledge and cold-chisel. It has been considered necessary that the cutting-blades of shears should touch or pass by each other; and every attempt to cut iron, with the hardest rotary-dish or knife, has failed. Not only have the fibres of the iron to be cut been raggedly rent asunder and distorted, but the cutting edge has crumbled away under the intense pressure required. A new era in iron-working, and in the value of the mineral treasures of this country, has begun.

The cut represents a newly patented machine, which, with but little motive power, cuts the heaviest and longest boiler-plate as noiselessly as if it were paper, at a minimum rate of ten feet per minute, leaving the divided edges perfectly square and true, and both surfaces as level and unwarped as when the plate left the rolling-mill. All the labor of trimming and filing the several edges is dispensed with. Curved lines or straight are cut with equal facility; and the plate is instantly ready to make a square joint, as the side of a boiler, the door of a safe, or the plank of an iron steamer or of a house. A three-inch belt, at half-speed, gives sufficient power to divide the thickest plate; for the edges of the cutting-knives need not come nearer together than half the thickness of the material to be cut. The cold iron falls, as by magic, under the knife.

This great invention has been made by Mr. S. P. Ruggles, of Boston, Mass., whose reputation as an inventor of printing-presses is deservedly world-wide. The efficacy of this machine arises chiefly from a combined motion given to the cutting-wheel, by which it revolves, with mathematical exactness, a certain degree faster upon its axis than it would naturally rotate upon the horizontal plane along which it is made to move—*thus cutting with a drawing stroke.* The power thus given may be felt by a simple experiment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made upon a wagon-wheel, which ordinarily makes but a slight track on a hard beach. If, while it is slowly moving, a strong hand should lift the hinder spokes, the indentation would be changed into a deep furrow, and this without adding an ounce to the vertical pressure.

Invention reverts, in this machine, as in almost all great discoveries, to first principles. By the combined rotations above described, and the aid of a strongly-toothed horizontal rack, the upper enamel of the plate is divided by the superior knife, and the lower enamel by pressure upon the edge of a lower stationary blade, while the same pressure at the same instant breaks the internal iron. Thus an acute genius among a labor-saving people, returns to and simultaneously effects all the operations of the rudest blacksmith, who first cuts with a cold-chisel the enamel only of his iron bar, and then breaks the internal substance by a blow over the edge of his anvil. This return to nature, or those first principles of rude art which seem to be taught by her, so simple are they, is one of the highest tests of inventive genius.

In the above machine, an arrangement of eccentric bolts, turnable at pleasure, elevates or depresses the rotary-knife, according to the thickness of the metal to be cut. This appliance dispenses with much power, and preserves the metal from the warping and twisting which must take place when the cutting-blades, as in ordinary shears, are crushed into contact or by each other.

This is no theoretical abstraction. Below are the certificates of two practical mechanics:

AMOSKEAG MACHINE-SHOP,
Manchester, N. H., Jan. 18, 1854.

We have been cutting all our boiler-plate, for the last nine months, with one of S. P. Ruggles' Cutting-Machines. It has surpassed our highest expectations, cutting the heaviest plate with great economy of power and saving of labor, leaving a smooth, uniform edge, without warping or twisting the plate. We are satisfied that for power, simplicity, and durability, it is unequalled. O. W. BAYLEY, Agent.

CANTON, Jan. 25, 1854.

MR. E. RICHMOND, Agent: My attention was recently called to witness the operation of a machine invented by S. P. Ruggles, for cutting boiler-iron, and other sheet metals. I was surprised to see boiler-iron cut at one stroke so evenly and perfectly, with so little power and so simple a machine.

I am confident that this is the ONLY TRUE PRINCIPLE FOR CUTTING sheet metals, and would commend its use to all mechanics who desire a machine for this purpose.

Yours, respectfully, LYMAN KINSLEY.

The machine referred to above at the Amoskeag Works, was found so uninjured, after nine months' incessant work on boiler-plate, that the knife, being then for the first time removed for examination, was replaced without grinding, and has never yet required it. A small machine, used by a brass-worker for more than a year, without sharpening, was found upon trial so sharp as to cut note-paper with ease.

By a simple apparatus for circular work, attached to these machines, disks of metal of every thickness, from a cylinder-head to a pot-lid, can be whirled out at a rate to astonish an old-fashioned tinman.

More than usual space has been devoted to the merits of this invention, because few affect so many branches of industry, and perhaps none, since the discovery that coal could be used for fuel, has so much enhanced the real value of the mineral deposits of this country. The high prices of building materials are a matter of anxious moment. Iron has been suggested as a substitute; but the labor of cutting it at pleasure, so as to meet the fickle

whims of builders, has been fatal to a general use of it. But hereafter, on the same grounds of economy and necessity that the bowels of the earth have been ransacked for fuel which its surface is ceasing to supply, iron will be the substitute for lumber. Iron houses will be common, when it is universally known that a machine exists which can be carried to the building-site, and there, by man or horse-power, cut iron planks, in any shape, to order, quicker than the best carpenter can now saw those of wood. This machine does this; and by decreasing a hundred-fold the expense and labor of working up iron-plate, develops new uses for this and other similar intractable materials, and thus will eventually enhance the value of mining property.

Among smaller considerations, no tin, brass, copper, or sheet-iron worker, safe or locomotive-builder, working on old principles, can compete with this great labor-saver. In this country, labor-saving machines do not throw operatives out of work; but, by bringing the commodities that such machines produce within the reach of more consumers, they increase the demand for such articles, and for labor upon such stages of their manufacture as are not effected by the improved method of production.

With one of these machines for cutting pasteboard, and a lilliputian card-press, invented by Mr. Ruggles, and which can be almost packed in a hat-box, any woman or clever boy can cut out of sheet pasteboard and print shop-cards, of any size and device, at the rate of several thousand per hour. This work would afford such persons an independent livelihood, and in this view the invention deserves the careful attention and approbation of every community.

The chief engineer of the Ordnance Department of Great Britain has given his valuable indorsement to this invention, by purchasing for the Woolwich Arsenal, by order of his government, for $1200, the second machine ever made under this patent, for cutting quarter-inch iron plate. Such practical approval is a compliment to American genius.

Machines upon this principle are manufactured of different sizes, and particularly adapted for cutting paper, pasteboard, sheet-tin, copper, tack and nail-plate, boiler sheet-iron, and steel. Their prices range, according to size, from $25 to $1500.

Mr. Edward Richmond, of Boston, Mass., is the agent for the Cutting-Machine Manufacturing Company, who are ready to receive orders at their establishment, No. 152 Washington street.

ENGLISH AND AMERICAN IRON.

Returns give us the following statements. During the four months ending May 5, 1853 and 1854, the export of metals from Great Britain was as follows:

	1853.		1854.	
	Tons.	Value.	Tons.	Value.
Iron, pig,	83,760	£254,180	100,958	£421,608
Do. bar, etc.,	312,831	1,827,081	207,417	1,919,893
Do. wire,	3,083	65,768	2,813	56,618
Do. cast,	18,752	161,073	25,141	243,381
Do. wrought,	50,944	758,892	64,442	1,011,395
Total,	369,370	£3,066,994	400,771	£3,652,895

That England relies upon this country largely as a market for her iron and other metals may be seen by the following extract from the *Derbyshire Advertiser:*

"There is not the least indication of any depression in the iron trade; on the contrary, fresh orders arrive daily, and the Indian and American demand for railways is very great. The inquiry for Scotch pig-iron is as active as ever, and there is no probability of any diminution in price so long as stocks continue to be kept down. The demand for Derbyshire pigs is unprecedented, and much greater than we make. We have many furnaces erecting in the neighborhood of Middlesborough and in the Cleveland district, and when their make is brought into the market it may have some influence on prices. The steel trade is exceedingly active, and orders are plentiful. The demand from America and Germany for manufactured articles is good. The operatives are fully employed and apparently satisfied with their condition in reference to trade and employment. . There is a California gold-digging mania raging, on a small scale, in the north of Derbyshire, in consequence of the discovery of the precious metal in the Derbyshire mines. The metals are found in the channel, and the lodestone—the gold—being sprinkled over the stone in little nuggets, so apparent to the observer that it is wonderful that they should have escaped so long."

SPIRAL TURNING IN A COMMON LATHE.

THE lathe has become a sort of king among tools for the manufacture of implements, as the cam has for working-machinery. As the latter is equally an essential in all sorts of mechanisms, from the sewing-machine to the steam-engine, so lathes are now used to work out all forms, regular and irregular, from the barrel or hogshead of a single block to an ivory thimble, and is alike successful in wood, ivory, metals, etc. We find in the *Mechanics' Journal* the following description of a lathe, for the purpose indicated in our title:

"I know of no means by which the spiral or twist can be turned in the common lathe, unless it is by some of the expensive machines of the party I have named. I now send you a rough sketch of a plan of my own, and which, I flatter myself, will not only be found simple but really useful.

Fig. 1, which I call a screw, or traversing chuck, is in fact, in the original, the body of what is commonly called a patent cork-screw, with the addition,

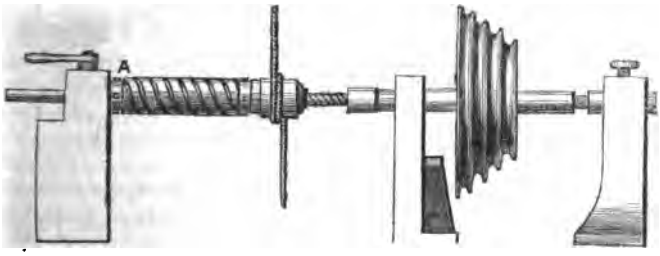
Fig. 1.

at one end, of a brass socket, with screws to pinch the end of the wood when fitted into it; at the other end is the screw, to screw it on to the mandril. The screw of this chuck, if made much use of, should be manufactured iron, and case-hardened, the number of threads being according to the fancy of the maker; it will work better with several than with only one, and allowed a

traverse of about four inches, quite sufficient for any purpose. The guide-plate in the tube should also be of iron, case-hardened, and the tube itself of tough gun-metal. An instrument of this kind would be of great use in connection with the foot-lathe. The pointer and divisions on the worm require explanation; by this means any twisted column, with its outer surface left flat instead of rounded, as usual, may be ornamented with beads, or with any other device, in connection with the overhead motion, the divisions making a *spiral division-plate*, which, with ingenuity, might be turned to good account, as the means of ornamenting cylinders of any kind spirally, without reference to turning the twist. The screw-pointer and spring are drawn in fig. 1, for simplicity of explanation. The spring should be coiled at right angles to its present position, round the end of the tube, in the same way that the spring is applied to a powder-flask, the pointer to go through the tube as a sure guide.

Fig. 2 is a sketch of the apparatus in use. In this view the chuck is shown screwed on to the mandril, which is now to be stopped by any of the means

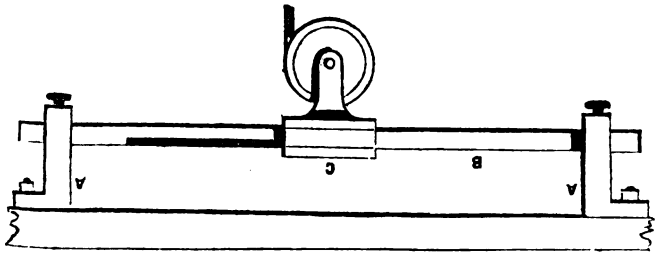
Fig. 2.



used for that purpose; the back-screw of the movable headstock being removed, the guide, A, has free passage to work, the cord, from a temporary pole, being placed round the body of the chuck, which, if made for the purpose, would have several grooves cast upon it for different speeds, and carried down to the treadle, as is usual in a pole-lathe. It is often convenient to have the means of converting the movement of the foot-lathe into the backward and forward motion of the pole.

Fig. 3 is a neat and convenient plan of doing this, and ought to be part of a lathe apparatus. At A are two brackets of wrought or cast-iron, screwed

Fig. 3.



to the ceiling above the lathe. B is a rectangular bar, long enough to allow the sliding piece, C, with its spring-box, to traverse a sufficient portion of the bed, the end of the cord being fastened to the spring-box, with two or three coils round the barrel."

MISCELLANEOUS.

IMPORTANT DISCOVERY.—The *Gazette Hebdomadaire de Medecine et de Chirurgerie* gives an account of some experiments equally important in a practical as in a theoretical point of view, and from which it results that air passed through cotton no longer produces either fermentation or putrefaction. The journal describes as follows the plan of proceeding of two German savans who have made these experiments: The apparatus made use of is simply composed of a glass globe, hermetically closed by a cork covered with wax, and provided with two tubes, one of which is in communication with one of the extremities of the filterer, which is itself terminated by a small tube at the right angles. The second tube serves as an aspirator; it goes down almost to the bottom of the globe, and communicates hermetically with a gasometer. The globe contains the fermentable substance.

When it has been ascertained that the joints are perfectly closed, the globe is placed in a vessel containing boiling water, where it is kept until the different tubes of communication have become hot, after which a second examination takes place to see that every part remains hermetically close, and the cock of the aspirator is placed in such a manner that the water runs drop by drop. A first experiment was made on muscular meat, with water added; and in order to make a proper comparison, there was placed near the apparatus a second globe containing the same kind of meat, and communicating freely with the atmospheric air. At the end of a fortnight the matter contained in the second globe was in a complete state of putrefaction, while that in the globe which only received the filtered air was not at all changed, and when at the end of twenty-three days the apparatus was opened the meat was just as it was on the first day. From those experiments it results that meat recently boiled, and fresh broth, may be kept thus good for several weeks.—*Chicago Democrat.*

A SEA MONSTER.—An immense screw and paddle steamer, for the Eastern Steam Navigation Company, is about to be built at Millwall, England. The ways are already commenced, and several hundred tons of iron are ready to be put together. She is to be completed in about two years. Her extreme length on main deck will be 700 feet, length of keel 680 feet, beam 83 feet, hold (forming four decks) 58 feet, length of principal saloon 80 feet, height of ditto 15 feet, tonnage 10,000, or builder's measurement 22,000 tons, stowage for coal 10,000 tons, stowage for cargo 5000 tons; 500 first-class cabins, with ample space for second and third-class passengers, beside troops, etc., while the screw and paddle engines will be of the aggregate nominal power of 2800 horse. She will also carry an immense quantity of sail.

The *London Builder*, in speaking of this vessel, says: "The principle of construction, as designed by Mr. Brunel, will be similar to that of the tube of the Britannia Bridge. Her bottom, decks, and sides, are to be double, and of a cellular form, with two feet six inches between. She will have fourteen water-tight compartments, also two divisional bulkheads running her whole length, so that it would appear as if the principles of the T girder, as we suggested, only in this case doubled, were comprised in the new principles of construction. The great length of the ship, it is contended, according to all present experience, will enable her to pass through the water at greater velocity, with a similar power, in proportion to her tonnage, than ordinary ves-

sels now require to make ten knots an hour, and that speed is, in fact, another result of great size."

THE GREAT HARVESTING-MACHINE.—Truly can it be said, we live in a "great age." It will appear almost incredible when we say to our readers that there is a harvesting-machine, now at work in the Valley of San Jose, that will harvest *twenty acres* per day, and yet such is the fact. We saw it moving on its ponderous wheels, like the great "Car of the Juggernaut," and heads were bowing down before it as numerously, and were crushed as effectually, also—for this machine not only harvests the grain, but threshes, cleans, winnows, and bags it, performing all the work at the same time.

A team of twenty horses takes this mighty wholesale harvester steadily through the field; the knives take off every head clean and carry them over a cloth drum into the thresher, this in turn taking them into the separator and fan-mill, and from thence up a hopper into the bags; these are filled, sewed up, and rolled gently off into the field behind the machine. At the close of the day's work, the harvester looks back and sees twenty acres of headless straw, while the decapitated grain lies over the broad field in well-filled bags, resembling hundreds of large sheep.

This is one of the most wonderful inventions of the age, and the sight of it is well worthy a visit to this great valley. The machine will be at work for some time, and all who feel interested will never regret the trouble it costs to witness it. It is at work upon the grain-fields of Messrs. Horner, Beard, and others, near the Mission of San Jose.—*Cal. Farmer.*

TOMATO-FIGS.—We have seen and tasted those delightful figs referred to in the following article from Hovey's excellent *Horticultural Magazine*, and indorse all which he says in their favor. We hope that those who raise abundance of tomatoes will save this recipe, and try the experiment, if only on a small scale.

Recipe for Tomato-Figs.—Pour boiling water over the tomatoes, in order to remove the skin; then weigh them and place them in a stone jar, with as much sugar as you have tomatoes, and let them stand two days; then pour off the syrup, and boil and skim it until no scum arises. Then pour it over the tomatoes, and let them stand two days as before; then boil and skim again. After the third time they are fit to dry, if the weather is good; if not, let them stand in the syrup until drying weather. Then place on large earthen plates or dishes, and put them in the sun to dry, which will take about a week; after which pack them down in small wooden boxes, with fine white sugar between every layer. Tomatoes prepared in this manner will keep for years.

A few apples cut up and boiled in the remainder of the syrup make a very nice sauce.—[MRS. ELIZA MARSH.

It is only necessary for us to add, that the Committee of the Massachusetts Horticultural Society awarded Mrs. Marsh the Society's Silver Medal for excellent specimens exhibited November 29. They were tested by the committee, and pronounced to be superior to any they had ever seen. They were put up in small boxes, and to our taste were far better than two thirds of what are sold in our market for the best Smyrna figs.—[ED. HOR. MAG.

THE "MAST."—It is an extraordinary fact, that though the dry character of the season has cut off the late crops, there is a most astonishing mast. The oak-trees are loaded with acorns, and some of them, we are told, will yield ten bushels. These acorns, we are informed by those who ought to know,

for the purpose of fattening hogs are equal to corn; particularly is it the case with the acorns from the white-oak. Where our farmers live in the neighborhood of forests, they will be able to make nearly their usual quantity of pork, especially if they have sufficient corn to feed their hogs a few weeks.

Mast-fed pork is not, however, in as high esteem as that which is corn-fed; but a good deal of the former will be brought to market the coming fall.—*Springfield (Ill.) Journal.*

THE past season is said by the oldest inhabitant to have been the driest since the year 1826.

RECENT AMERICAN PATENTS.

FAST WOOD-SCREW MACHINE.—Mr. George F. Wilson, of Providence, and Mr. James M. Wiley, of Olneysville, R. I., are the joint inventors of a machine for making wood-screws, which equals in rapidity of execution four of the best machines now employed in that branch of manufacture. The machine is termed the Wood-Screw Rotary Machine, all the principal movements being of a continuous rotary character. Wood-screws, termed screw-nails by some English authors, are usually completed in three machines, one only of which is termed a "wood-screw machine." The first takes wire from the coil and transforms it into "screw-blank" by motions closely analagous if not identical with those of the common rivet-machine. Another machine saws a shallow score across the top of the head, while the main machine, on which all the study and inventive skill is necessarily bestowed, seizes the blank and cuts the proper thread thereon. The thread of a wood-screw is all produced by removing the metal between, there being none of the metal squeezed up as is done by the ordinary dies of the machine-shop, so as to make a screw of greater total diameter than the original wire. The blanks being fed in by by self-acting mechanism, are successively caught by a pair of jaws in a revolving chuck, held firmly by the head, and compelled to rotate steadily in one direction, while a properly-shaped tool is repeatedly pressed against its side, and moved toward the point. Several reciprocating movements are thus necessary, even with a sharp and keenly-adjusted tool, before the thread is sunk to the required depth, and the large amount of "gim-crackery" employed renders the machine far more "ingenious" than simple or efficient. Such, although usually concealed with some care from the gaze of the uninitiated, is believed to be the method by which these useful instruments are generally prepared, and it is certainly that employed in the new machine, excepting with regard to the cutting-tool and its movements. The new machine, like the older varieties, completes the deep spiral crease only by a repetition of shallow cuts, each scraping deeper than its predecessor—one main point of difference lying in the fact that the new machine carries the tool, or rather a series of tools, on a slowly-revolving horizontal wheel—the movement being continuously rotative. This arrangement not only saves the time otherwise lost in the return motion, but avoids the employment of much complex mechanism. A point of equal or perhaps greater importance is gained in dividing the destructive effect on the edges of the cutters between eight tools, (that number being employed in each series,) so that, other things being equal, this machine, once adjusted, would remain sharp eight times as

long as the other. The simplicity and compactness of the rotary, however, allows four machines, so to speak, to be combined in one with decided advantage, so that one of the ponderous constructions, which are some four feet square and three feet high, throws out the finished article with four times the rapidity, and remains in order, from the principles of its construction, something like eight times as long as the older devices.

The machine can not yet be said to be completely in operation—one only, and that one not entirely perfect, having been in motion at the period of our visit. There can be little doubt, however, that this simple although at the same time compound machine is not only a decided improvement over all the devices before proposed for the purpose, but one which will so far facilitate the manufacture of this admirable fastening as to cheapen and diffuse it to a still greater extent than at the present moment.

Sawing-Machine.—The vast timber interests of our country is evidenced by the great and universal attention which has been devoted to timber-cutting machines of every description. To the many various improvements in sawing machinery which have already been made, Pinney Youngs, of Milwaukee, Wis., has added another, for which he has taken measures to obtain a patent. It relates to sawing boards direct from the log, and consists in the use of two pairs of saw-guides, attached to vibrating levers—one pair at each end—in such a manner that the guides may be brought in contact with the saw (a circular one) at either end. When one pair of guides is brought in contact with the sides of the saw, the guides at the opposite ends of the levers will be thrown out from the saw at the period when the carriage has moved to the end of its way and receives its return motion, whereby it is enabled to cut both ways, during both the forward and back motion of the carriage. He has also applied a combination of devices for setting the log correctly and quickly.

Improved Magazine, Repeating and Needle-Gun. By Edward Sidner, New-York.—The nature of this invention consists in placing below the gun-barrel a peculiarly-constructed barrel, to contain from forty to fifty cartridges, which said cartridges load themselves into a revolving breech-piece, by means of a piston pressing against the cartridges, said piston being worked by a rack, and which rack is worked by the cocking and discharging of the gun.

With this self-loading apparatus it is possible to fire off, in quick succession, one cartridge after the other, without taking the gun from the shoulder, until the whole amount of charges originally filled into the cartridge-barrel are discharged.

Improvement in Combing Cotton and other Fibrous Material. By James Noble, of Leeds, England.—This invention consists of combining two rotating rings of comb or suitably-formed teeth, one ring of teeth rotating within the other, but eccentric thereto, so that at or near one point of the revolutions of the two rings, they come nearly or quite together, or in contact with one another. Above such rotating rings of teeth, and on the axis of the inner of the two revolving rings, there may be a circular frame, carrying bobbins with prepared cotton or other fibres; and such prepared fibres are to be caused to descend to and come between two surfaces, and upon bushes by which they may be placed into the teeth of the revolving rings, while they are in rotation, just in the rear of the point where they come together. Where the rings come together, the fibres are drawn from between the teeth of the rings by drawing-rollers; as the distance apart of the peri-

pheries of two revolving rings increases, the long fibres remaining in the rings will be retained in the teeth of one of the rings, (namely, the outer ring,) and the teeth of the other ring will retain the shorter fibres, which may be removed by a brush. The longer fibres so carried round are lifted out of the teeth and again placed into the teeth of the two rings, and come again to be drawn off by the rollers.

Improvement in Cordage Machinery. By Philos B. Tyler, Springfield, Mass.—This invention consists in connecting with the bobbins or spools a variable friction, which shall keep up an exact balance or resistance, or nearly so, at all times, without regard to the unevenness of the yarn, or the quantity of yarn on the bobbin, working with equal facility upon a rough and uneven thread as upon one smooth and even, and when the bobbin is full, or when it is nearly wound off, laying all the strands into the cord under an equal tension. When the bobbin is not placed in a flyer, but the yarn or thread is required to be drawn off, under an even tension, a simple standing-frame may be substituted for the flyer, so that the lever and spring, and friction-brake, may be brought to bear upon the bobbin with the same effect as when the bobbin is on a flyer, and in motion.

I claim the regulator, substantially as above described, wherein the tension of the strand so acts upon a friction-brake as to make a uniform resistance, and consequently a uniform tension of the strand or thread.

Improvement in the Preparation of Collodion for Photographic Pictures. By James A. Cutting, Boston.—The nature of this invention consists in the use of gum-camphor in addition to the exciting materials in the preparation of collodion for positive photographic pictures on glass. In a pint bottle introduce twelve ounces of collodion; add to it one drachm of iodide of potassium dissolved in alcohol; then shake the mixture thoroughly and add thereto eighteen grains of refined gum-camphor, shaking the mixture again until the whole is combined, then allow it to settle, when it is fit for use.

Improved Bevelling Plane. By M. J. Wheeler, G. W. Rogers, H. W. Pierce, and M. B. Tidey, Dundee, N. Y.—The object of this invention is to plane a double bevel, or, in other words, to plane two faces at any desired angle to each other, and to a third face. The invention consists in attaching the two cutters which are to plane the two faces, to two wings, which are both hinged or otherwise attached to the body of the plane, so as to swing round a common axis, and each of which is adjustable and capable of being secured in any position, independently of the other, so as to bring and set the faces of the cutters at any angle to each other, or to the fence which is employed to guide the plane.

Improvement in Ornamenting Metallic Buttons. By Hiram W. Hayden, Waterbury, Ct.—The nature of this invention consists in forming a concave die in such a manner that it operates on the whole of the surface to be deadened, and the surface of the die being entirely removed at those parts that require to be bright, they are left of the original brightness of the metal, and then another die, composed of punches, each ground and highly polished in the required prismatic forms, is impressed into the bright parts of the button, forming flat prismatic reflecting surfaces; the whole button thereby having as good, if not better, appearance than those buttons chased by hand, and by this means about thirty gross of buttons can be done in the same time that about two gross can be chased by hand.

Interesting to Builders and Brickmakers.—A new and important method in the manufacture of bricks has just been patented at Washington, which is destined to effect an important reduction in the cost of erecting buildings in which this material is used, and now-a-days there is no building where brick does not form a component part. By this new method, introduced by Baron de Palm, to whom the patent has been granted, houses can be built of sound, solid brick walls, at a price, we are informed, not exceeding that of an ordinary frail wooden tenement. This fact, when considered in relation to the extraordinary high rents now paid, and occasioned in a great measure by the prices of building materials, is a consideration of no ordinary magnitude. When the kilns or furnaces are put in operation for the manufacture of bricks under this process, it will doubtless attract the attention of practical men, and effect a great change in the cost of buildings of every description. The peculiarity in the making of bricks under this patent consists in the construction of the kiln. The arrangement is novel, consisting of partitions and sub-divisions in the kiln, where the baking is carried on, and by a series of registers the heat is conveyed from one compartment to another without any waste. There is little or no loss of unbaked or overburnt or vitrified bricks, and a surprising saving of fuel. The cost of fuel, and of the waste of material and labor, under the old system, more than doubles, and probably more than quadruples the cost of bricks when pronounced ready for market in the old kiln. The fuel question now engrosses largely public attention, and vast quantities of pine, hickory, and other woods now consumed in the burning of bricks, will under this patented mode be economized to the extent of two thirds of the present consumption. It, therefore, is a subject of interest and importance, both as to public and private economy. Beside the making of bricks, the kilns can be used for the baking and hardening of all kinds of pottery, and will cheapen in a large degree the manufactures of that description. The patentee, we are told, has secured his patent-rights in England, France, Belgium, Holland, and Germany, besides the United States. Several eminent architects in London and Paris have testified to the importance and value of the patent, and several well-known brickmakers at Washington have given highly favorable certificates of the usefulness of the new kiln. Among those who have examined the patent with a view to test its scientific results, is Professor Charles T. Jackson, of Boston, who says: "I am of opinion that this new kiln is a valuable improvement adapted to the thorough and efficient baking of bricks and pottery. I am also of opinion that the kiln is admirably adapted for the baking of ornamental brick-work, hollow bricks, and chain-pipes, such as can not be baked in ordinary open kilns."

Improvement in Folding and Measuring Cloth. By Wm. C. Wright, Boston.—I claim, first: making the folding-table of a machine for folding and measuring cloth, to move with a reciprocating motion, so as to make the folds and determine their length, and also the making said motion adjustable, in order to change the length of the folds to be made and measured.

Second. I claim the combination of the moving folding-table operating as above specified, with the guiding folders and the elongated holders to each side of the table, for folding and guiding the cloth to be folded, and holding it as herein above set forth.

Third. I claim making the said holder adjustable upon the ends of the folding-table, so as to accommodate different lengths of folds, as herein above set forth.

Fourth. I claim relieving the cloth when folded from the folders and holders, so that it may be removed from the folding-table by raising all of them simultaneously by means of the treadle connected to the said folders and holders through the mechanism herein above described, or in any other way substantially similar.

IMPROVEMENT IN PADLOCKS. By STEPHEN WHITE, Newark, N. J.—This invention consists in making the rear end of the sliding-bolt, when used in combination with the turning-bolt, with a shoulder on the lower edge, which, when the bolt is thrown forward, permits the rear end of the said bolt to descend, so that the said shoulder shall prevent its running back, unless the rear end be first lifted up by the action of the key to clear the shoulder.

What I claim is, making the sliding-bolt with a shoulder, or its equivalent, acting substantially as specified, in combination with the turning-bolt, both entering the mortise of the shackle in opposite directions, substantially as specified, and for the purpose set forth.

IMPROVEMENT IN THE FURNACES OF STEAM-BOILERS. By JON. AMORY and WM. P. PARROTT, Boston.—This invention consists in improvements designed for the purpose of effecting a saving in the quantity of fuel consumed in heating locomotive, marine, and other steam-boilers, and are more particularly applicable to "Baker's steam-boiler furnace," so called. This desideratum of economizing the fuel, is effected by supplying the fire-chamber with hot air instead of cold air, thereby rendering the combustion of fuel more uniform and perfect. In Baker's furnace, the unconsumed gases and other volatile products which emanate from the fuel, are retarded in their passage to the chimney by a series of reverberatory chambers, of semi-elliptical form, leading from the fire-place through which the said products are circulated, and retained long enough to exhaust their heat, deliver the same to the boiler, and insure their perfect combustion, before they are permitted to escape. Taking advantage of this circumstance, we are enabled to convey hot air instead of cold air to the burning fuel.

The second improvement consists in conducting out of the furnace the carbonic acid, or other heavy and incombustible gases, by inserting a pipe which communicates at one end with the bottom of the furnace, and its other end with the smoke-flue.

We claim conducting off the carbonic-acid gas, or other heavy and incombustible gases which check combustion, by means of a pipe which communicates with the bottom of the furnace, at or near one end of the same, and with the smoke-pipe or flues as above described.

IMPROVEMENT IN GAS AND LIQUID REGULATORS. By THOS. H. DODGE, Nashua, N. H.—This invention is intended to be principally employed as a gas-regulator, to regulate the consumption of a number of burners, by causing the pressure on each that is lighted to be uniform, and uninfluenced by the number of the others that are lighted, or by the pressure on the main. It is also adapted to regulate the flow of fluids at a given pressure, without regard to the quantity used, or any variation in the size of the outlet, or in the pressure on the main or inlet.

The invention consists in the employment of two chambers, placed side by side, and communicating with each other at the bottom through an open passage, and at the top by a passage which is opened and closed by a valve attached to a float which is placed in one of the chambers, to be acted upon by water, or the liquid contained in the lower parts of the chambers. The chamber containing the float is in communication with the outlet where the

gas or fluid is consumed or discharged, and the other chamber receives the inlet-pipe. The pressure of the gas or fluid on the surface of the water or liquid in the inlet-chamber, forces the water or liquid upward in the outlet-chamber, in which the pressure varies, according to the number of burners lighted, or the area of the outlet, and thus causes the water-level to vary, and the float to give the valve a suitable amount of opening. The float and valve are also influenced by variations in the pressure in the inlet-pipe, so as to contract the opening of the valve when the pressure increases, and *vice versa*.

I claim the employment, for regulating the flow of gases and fluids, of two chambers having communications at top and bottom, and being partly filled with water or other liquid, and furnished with a valve and float, all arranged and operating substantially as described.

Improvement in Bank-Locks. By Wm. Hall, Boston.—This invention has particular reference to the construction of the key itself, or that part of the mechanism which is employed to arrange the tumblers and shot the bolt. The lock to which it is applicable is a double-acting tumbler lock of ordinary construction.

I claim the slotted slides, which are allowed to arrange themselves upon the steps of the former to form the bits of the key, in combination with the pin or its equivalent, when the tumblers are operated by *turning* the key, whereby the tumblers are rendered inaccessible to any instrument that may be inserted at the open key-hole, and the latter is closed whenever the key is turned so as to bring the slides to bear upon the tumblers.

Improvement in Gas-Burners. By Wm. Mallerd, Brooklyn, N.Y.—The nature of this invention consists in making the gas-burners called fish-tails, cockspurs, argands, or bat-wings, of a material not heretofore used for the purpose, which material is designed to resist all corrosion to which gas-burners are exposed, and which injure and destroy all gas-burners now ordinarily in use, made of iron, brass, or other material.

The gas-burners are, for this purpose, in that part exposed to the flame, made of block-tin, substantially unalloyed; for the tube, any metal, thickly coated with tin, will answer, and prevent corrosion at the point where it is connected with the tip. The tip and tube are connected, by the aid of a blow-pipe, without any solder.

Improved Double-Acting Force-Pump. By John H. McGowan, Jr., Cincinnati, Ohio.—I claim the combination of an air-chamber communicating with the pump above all the valves, with a vacuum-chamber communicating with the pump below all the valves, whereby the elevation of water is rendered more equable and effective, with a saving of power as herein set forth.

Improvement in the Manufacture of Wooden Buttons. By L. L. Platt and A. L. Platt, Newton, Ct.—This invention relates to a new and useful improvement in wood buttons, and consists in compressing the blanks or circular pieces of wood, so as to render the wood compact and dense, and causing the buttons to be as strong and durable as those manufactured from bones.

We claim manufacturing wooden buttons by cutting the "blanks" from slabs which are of a greater thickness than the buttons are intended to be, and reducing said "blanks" by *pressure* to the desired thickness, for the purpose of forming durable and well-proportioned buttons, as herein set forth.

IMPROVEMENT IN MACHINES FOR CUTTING BRADS. By WM. J. MILLER, Cold Spring, N. Y.—This invention is for certain improvements in machinery for cutting brads, lath-nails, and others of similar character. Such brads and nails are cut from a sheet or ribbon of metal of a width suitable for making the length of one brad and the head of another. The dies for cutting must be of such shape as to give the proper taper; and in order, therefore, to maintain a fair edge during the cutting up of the strip, the heads are formed alternately on each side.

I claim the arrangement of the vibrating shear in relation to the revolving shears or cutters as connected, so as to change the position of the cutting edge of the vibrating cutter, and cause it always to stand parallel with the edge of each revolving cutter until the nail has been cut off substantially in the manner set forth.

IMPROVED CARRIAGE AXLE. By WM. H. SAUNDERS, Hastings, N. Y.—I claim the combination of a taper-axle having an enlargement at the root, with a box having an inside similar enlargement at its rear, and a diminution of size outside, provided with eccentric rings or grooves for allowing it to be wedged in the hub, the whole being for the purpose of strengthening the axle without enlarging the box, and enabling me to use smaller hubs, with a sufficiency of wood therein to preserve the necessary strength, substantially as represented.

IMPROVED CALIPERS. By PERLEY SEAVER, Oxford, Mass.—The nature of this invention consists in making the caliper with a sliding cam or wedge to be operated by a nut, and playing against cam or cams, or projections on the sides or jaws, to move them with facility, and give firm support to the jaw at all times.

PROCESS OF ENGRAVING OR PRINTING UPON GLASS. By MILTON D. and LYMAN W. WHIPPLE, Somerville, Mass.—The first part of this invention consists in causing a metallic cylinder, having the desired figures or letters engraved thereon, to roll in contact with the surface of glass to be engraved, emery, either dry or mixed with water, being kept constantly at the point of contact between the two.

Those portions of the cylinder which are engraved or countersunk below the surface produce no effect, but that portion of the cylinder which is unengraved presses or grinds the emery upon the glass. The surfaces thus produced being more or less rough according to the fineness of the emery.

IMPROVEMENT IN THE PREPARATION OF ARCHIL. By JONAS EBERHARDT, Philadelphia.—This invention consists in taking the extract of archil and combining it with a given quantity of calcined magnesia, according to the shade to be produced. When these ingredients are well mixed together, color can be prepared at any time for the purpose of printing, by thickening the compound with an addition of gum-water; the greater the quantity of gum-water the lighter the shade will be.

To produce the dark shade, the following proportions are required: 32 of extract of archil; 4½ calcined magnesia; 34 gum-water. When printed, the impression is steamed and washed.

I claim the production of a bright and clear steam-purple, without the use of any acid, after its being printed and steamed, as herein described, using for the purpose the aforesaid method.

NEW ENGLISH PATENTS, ETC.

IRISH FLAX PRODUCTION.—In a paper in the August number of the *Journal of Industrial Progress*, there are some interesting facts connected with this subject. In 1841, the area of flax cultivation was about 58,000 acres, while, in 1853, the flax crop covered 175,495 acres; that is, one acre in every 76 of arable land. It is estimated that 600,000 acres might be advantageously devoted to this cultivation, and that the produce of this number of acres would furnish about 150,000 tons of fibre, or about 40,000 tons more than the present consumption of the United Kingdom. Consequently, if the Irish would exert themselves, they might cut Russia out of her market. At present, Russia supplies us with nearly 70 per cent of the whole amount of flax imported, the total annual importations being upward of 81,000 tons, having an average value of £70 a ton. Taking the total annual consumption of flax in the United Kingdom at 110,000 tons, 73 per cent of which comes from abroad, it is somewhat strange that the Irish growers have hitherto wasted the seed, having adopted the practice of steeping the flax without separating it from the plant. Half a million sterling may be set down as the annual loss by this practice. In Turkey, Sicily, and other countries, the plant is grown for the sake of the seed alone, and they choose to throw away the fibre. The Irish growers have, consequently, to import seed. What comes in for this purpose, and for crushing, amounts altogether to 630,470 quarters, value £1,387,000. The Society for the Promotion of the Growth of Flax in Ireland have issued circulars and placards pointing out the importance of saving seed for next year's sowing, taking into consideration the probability of little Russian seed being obtainable. Mr. Roche, M. P., has 2500 acres of flax, and he intends to save the seed of the whole crop. Mr. Turnbull, of Rosemill, Dundee, has written to the Society to say that he has discovered the secret of treating flax-straw, and that he can make very fine fibre from straw which would yield only a middling article by other modes of treatment. He has also invented an easily-managed scutching machine, which is worked at a cheap rate, and gives from 10 lbs. to 22 lbs. of fibre from 100 lbs. of seeded straw. Taking seeded straw at £4 a ton, the flax can be brought to market under £40 per ton.

WILLISON'S DOUBLE-ACTING THRESHING-MACHINE.—A threshing-machine, on Mr. Willison's patent, recently made by Messrs. Taylor, of Ayr, for Mr. Willison, of Parish-holm, Douglas, gives working results apparently far superior to any hitherto obtainable by machines of the old form. This particular machine is 3 feet 4 inches in breadth, being somewhat larger than an ordinary two-horse machine; yet it is worked easily by a water-wheel only 7 feet in diameter. It threshes a "stook" of 12 sheaves of heavy grain in three minutes, the water-wheel buckets being all the while but half filled with water. It has been suggested, that machines even of this diminutive size are quite large enough for all possible purposes, inasmuch as they can thresh grain faster than one feeder can supply it.

DR. ARNOTT'S NEW FIRE-PLACE.—We lately inspected one of these new fire-places. Their construction is very simple, and their management easy. Their appearance differs little from that of an ordinary fire-place. The back and sides are of fire-brick, and the grate is fitted with a box beneath, to receive the charge of coals for the day. The box is open at the top, and the

fire is lighted in the usual way, ignition only taking place amongst those coals through which there is a draught; namely, those which are on a level with the bars, but not amongst those in the box below. As often as the ignited coals burn away, the fire is supplied with fresh material by raising the box with its contents. This is very easily done, by a contrivance in which the poker is made to act as a lever. Above the fire, a plate of metal is so arranged that the heat is reflected into the room, instead of being allowed to escape up the chimney. In the flue, there is a valve or damper, which can be turned by a handle, brought out in front, the object, of course, being to enable persons to increase or diminish the draught. Fresh air, direct from the atmosphere, is conveyed by a channel underneath the hearth, where it is warmed previous to its entering the room. The advantages of this construction of grate are said to be a saving of fuel, consumption of smoke, and retention of heat in the room, combined with good ventilation. Dr. Arnott has not thought proper to patent his invention, and it may be feared that persons will be making grates, to which they will attach his name, without taking care that they possess the advantages of the one we have noticed.

New Build of Steamer.—Mr. George Mills, of Glasgow, has lately patented an entirely new form of steamer, intended to ply on the Clyde with passengers. He purposes to proceed forthwith with the building of a vessel 150 feet long, with an extreme breadth of 32 feet. Both ends will have the usual shape of the bow, and the general form of the whole will be that of a vessel cut vertically from bow to stern; the two divisions made perfectly water-tight, and placed a little apart, and then bound together, first, below the water at the keel, and again at the deck, which will run flush over the whole vessel. It will be understood, from this description, that there will be a waterway right through the vessel, and in the middle a large paddle will be placed, working in a plane parallel with that of the vessel's length. At each end will be stationed a smaller paddle, working transversely by donkey-engines. The latter paddles will be used only when a side motion is desired. The intention of this arrangement, the practical effect of which only trials with a perfect vessel can enable us to judge of, is to move the steamer in every possible direction within a confined space; for instance, in harbor, or at piers crowded with other vessels, or in the sharp turns of a narrow river.

Manual Labor *versus* Machinery.—One of those mistakes in political economy, which are continually occurring amongst an unenlightened people, has lately been made at Barcelona, in Spain. We allude to the orders which have recently been given by the authorities to the cotton manufacturers of that city, to discontinue the use of self-acting machinery, and to convert the machines into hand-mules. This order has been made with a view to conciliate the operatives, who are too short-sighted to see that such a measure is calculated to do them injury in place of good. Of course, it is altogether counter to the spirit of free trade, and could not have even the least show of favoring those who seek it, if the competition of the foreigner were not prevented by restrictive duties. The first effect of the measure will be, to render the manufactured articles dearer than they were previously, and this will lessen the demand; that is to say, consumers can not satisfy their needs in consequence of the advanced price. Next, manufacturers' returns being diminished, capital will be withdrawn from the business, and then what becomes of the laborer when the fund out of which he was paid is removed? It is plain enough, that he must suffer by the very measure he adopted to better himself.

LIFE-SIZE SUN PORTRAITS.—Mr. J. E. Mayall, whose ingenious apparatus for producing the beautiful "Crayon Daguerreotypes," and which we described some time ago, has at length succeeded in obtaining photographic portraits of the size of life. The apparatus employed is of an immense size, the lens being one of the largest double achromatic lenses in existence, and the result is only obtained at the expense of very careful manipulation, combined with comprehensive arrangements. The mere production of a picture of a large size, would in itself be nothing unless accompanied by greater excellence and artistic effect; but Mr. Mayall's life-size portraits seem even to be without certain peculiarities and distorted appearances to be met with in most miniature photographs. A very few more strides of improvement and extension in this fascinating art, will soon reduce ordinary portrait-painters to the mere drudgery of coloring, finishing, and mounting the productions of their incomparable master, the Sun.

PREPARING SKINS FOR TANNING.—E. V. F. Kemaire, of Paris, has patented an improvement in tanning, which is thus described: The skins are first soaked and hung up in a dry chamber, heated to about 72° Fah. by steam. After remaining in this chamber for half an hour, they have distributed over them, by perforated tubes, a very alkaline solution of soda; this is repeated twice—half an hour between the operations. Afterward, at the same intervals of time, streams of water are caused to fall upon the skins until they are well cleansed, and are considered prepared in a superior manner for the other common processes of tanning.

IMITATION LEATHER.—Heiman Khonstam, of London, has secured a patent for the following mode of making imitation leather: Into a quantity of thoroughly boiled linseed-oil mix a quantity of lamp-black, sufficient to form a thick paste, taking care to stir the mixture well, so as to thoroughly incorporate the two ingredients. Then spread on the linen, woollen, or cotton cloth, which is to form the body of the imitation leather, a coat of this paste, and suffer it to dry, after which it is to be rubbed smooth with pumice-stone. Second, third, and fourth coats are then added, each of them containing less lamp-black than the first. After the last coat is thoroughly dried and rubbed down, it is to get two coats of varnish made with boiled linseed-oil and the sulphate of zinc; after which it may be enamelled, and resembles glazed leather.

BOILING OILS IN A VACUUM.—John Webster, of London, has taken out a patent for subjecting oils and varnishes to heat in a vacuum, instead of a vessel exposed to the atmosphere. In boiling oils and varnishes over a fire, many accidents have taken place from a flame being brought in contact with the escaping gas from the kettle containing the oils, etc. This method of boiling these substances in a vacuum will obviate this evil.

THERMOGRAPHY.—This is the designation bestowed by M. Felix Abate on a method lately discovered by him for transferring figures and tracings, whether natural or artificial, to wood, calico, and paper, directly from the objects themselves, provided these possess or are capable of being converted into plane surfaces.

This invention is an offshoot of the mode employed in Birmingham and Sheffield for transferring raised patterns, such as lace to metal, by means of pressure; a process since developed in many applications of great beauty both here and at Vienna, under the name of *nature-printing*; and which consists in taking impressions in lead, a soft alloy, gutta percha, or other

suitable material, from natural objects, a flower, feather, etc., by pressure; then obtaining metallic electro-plates from these impressions, and finally printing from these electro-engraved plates in the ordinary way.

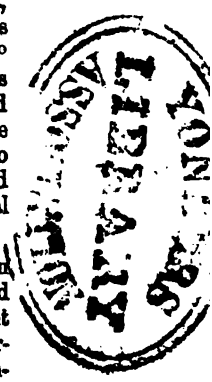
But, instead of this transfer of the figure from the natural object, say a feather, to the soft metal, thence to an electro-copper plate, and at last to the paper, M. Abate proposes to print directly from the objects themselves; and has exhibited to the Society of Arts some imitations of veneer and of inlaid work taken on sheets of wood, calico, and paper, and which he states were procured by the following process. The sheet of veneer or inlaying to be copied is to be exposed for a few minutes to the vapor of hydrochloric acid; the inventor names also sulphuric acid vapors, but this must be a mistake, this acid not emitting fumes at common temperatures; or it is to be damped with either of these acids diluted, and the excess of moisture carefully wiped off. The sheet of veneer is then laid upon one of calico or paper, and an impression struck off by a common printing-press; this impression remains invisible until, as with many of the sympathetic inks, it is exposed to the action of heat, which is to be applied immediately after the sheet is printed off, when a perfect impression of all the marks, figures, and convoluted lines of the veneer is instantaneously produced. This may be repeated for an almost indefinite number of times, wetting the veneer occasionally with the dilute acid, without the impression growing fainter. The designs thus produced all exhibit a general wood-like tint, most natural when oak, walnut, maple, and the light-colored woods have been employed; the darker woods, as mahogany, rosewood, etc., may be printed on cloth or paper, dyed or stained to a light shade of the ground color of the particular wood.

These impressions show an inversion of tints in reference to the original wood—the light parts being dark, and *vice versa;* but this does not interfere with the general effect. Should, however, a true image be desired, the inventor damps the wood-surface with a solution of ammonia, and then prints on the cloth or paper previously wetted with the dilute acid, and exposes to strong heat as before, when, he states, the effect will be a true representation of the wood.

This process is a very simple one, but as yet evidently limited in its application. We think, however, that this process will be useful in a decoration, since it obviously affords us the means of multiplying, at very little cost, accurate copies of rare and costly woods, marquetrie, mosaic and inlaid work generally, the which may be used for paper-hangings, as wainscoting and panelling; or, if well varnished with hard varnish, serve for many descriptions of "occasional furniture," toys, and boxes of various kinds, for which purpose choice veneers are now employed; and thus furnishing a great variety of cheap and tasteful things at a cost within the reach of people of limited means.

M. Abate also describes another process he calls METALLOGRAPHY, or printing on metallic surfaces from engraved wood blocks. In this process the block is damped with a solution of such salts as are decomposed by contact with certain salts. As, for instance, the salts of copper, antimony, etc., applied to the block, and printed on zinc and tin; or of hydro-sulphuret of ammonia, on copper, brass, and silver; salts which deposit either an adherent metallic pellicle, a film of colored metallic oxide, or stain the metal by the formation of a sulphuret, thus producing the figure cut on the block as in ordinary printing.—*London Critic.*

CASTINGS OF MALLEABLE IRON.—Mr. R. A. Brooman, of London, has taken the patent for this invention, which consists of an improved method of preparing wrought iron, so that it may be capable of being poured or cast into moulds for the production of malleable castings, or articles which shall have all the strength and qualities due to wrought iron. The invention is designed chiefly for the manufacture of railway wheels; but it is equally applicable to the production of other articles. Scrap or wrought iron may be employed, or bars or plates cut into small pieces, and it must be melted into crucibles such as are used for melting blister steel. To a charge suitable in amount to the crucible of one half of one per cent of charcoal by weight, one per cent of manganese and one of sal ammonia is added. The whole is covered from the atmosphere, and melted in a temperature of about 1500° Fahrenheit, which temperature is maintained for three hours. The metal is then poured into moulds. Other carbonaceous matters may be substituted for charcoal. The iron thus cast will, it is stated, be malleable, so as to be capable of being treated under the hammer in the forge, and formed into other shapes, and thus also part of the iron may be shaped in moulds, and part completed by forging, so as to produce intricate shapes and ornamental work.



RENEWING THE TEETH OF FILES.—In our Crystal Palace are shown several patented modes of renewing old files. Here is a method patented by E. Gilbert, of London: The teeth are renewed by a corrosive agent applied to the surface of the file. The files are first cleaned from any superabundance of greasy matter, and then placed in a rack inside a bath composed as follows: With one pound of unslacked lime mix two pounds of potash in one gallon of water, stir the whole intimately together, allow it to remain till three fourths the liquid has passed off by evaporation, draw off the remaining quarter of a gallon of liquor, and allow it to cool. In this liquor the files are to remain four hours, and are then to be removed and brushed, cleaned in clean water, and made quite free from grease, and then immersed in a vertical position, in a mixture of one part of sulphuric acid, diluted with two parts of water. The biting action of the acid attacks the whole surface of the files immersed; the continued effect of which is to deepen the several cavities between the cutting points of the teeth, which become as sharp as they were originally. The files must be immersed for from three to six hours or upward, according to the fineness of the files and the strength of the liquid. The files must be withdrawn and brushed from the oxide formed, five or six times during the process. The patentee states that the process is at once comparatively inexpensive, and removes so little metal, that it may be repeated three or four times on the same file, and thus it will render it advantageous to wear files much less than usual before renewing.

RAILWAY WHEELS. W. MORRISON, Bowling. *Patent dated February 18, 1854.*—This invention relates to the formation of cast-iron railway wheels, each in one solid piece, with a concentrically corrugated disc, or body portion, instead of spokes. The disc, the rim or tyre, and the nave or boss, are all cast in one piece, either with a chill for the tyre, or not. The corrugations, which may be of various transverse sections, and either simply undulating or angular, or composite, are concentric with the wheel's nave, and are formed in the plane of the wheel's motion, or at right angles to the axle. This system of construction insures the obtainment of a sound wheel, running smoothly and easily when at work.

The nave or boss is cast plain, or with but a slight ornamental moulding or bead upon it, the internal portion being cored out, or formed with an annular cavity, so as to render the absolute sectional thickness of the wheel more uniform, and at the same time save metal, whilst an extended and effective bearing upon the axle is secured. The solid disc portion of the wheel is cast in one piece, both with the boss and the rim or tyre part. This disc portion is of solid metal, of greater or less thickness, according to the diameter of the wheel, or the peculiar class of work for which it is intended. The two semi-circular corrugations are blended into each other, to form a uniformly and symmetrically curved face, presenting a handsome appearance when the wheel is in use. By the adoption of this shape of wheel-disc, several advantages are secured, as well in the primary cost of production of the wheel, as in the ease of action and the durability of the wheel in running. The pattern is of simple form, and it is capable of being moulded with very great facility, as it leaves the sand easily, whilst it furnishes a good impression of its contour. Again, in cooling, the undulatory or wave-like form of the corrugations allows each portion of the disc to work freely and regularly, so that all distortion and contractile injury is avoided. The corrugations, or concentric bends, may be of various dimensions or pitches, and two or more pitches may be combined in one disc, with an effect similar, or approximating, to that derived from the special form represented. Or, instead of curvilinear corrugations, the departure from the pure plane of the disc may be in the form of a zigzag; or, in other terms, it may be angularly corrugated; or such angular corrugation or divergence may be combined with curvilinear forms, producing what may be termed a differential corrugation. But it is preferred to form the disc in the manner delineated and described, as being simple in form, more easily made and managed, and producing a far superior effect in practical working. In some instances, it may be preferable to lighten the wheel by casting, or otherwise producing, holes or spaces in the disc; and these spaces or apertures may be either such as to cause the disc to have the appearance of a fair solidity, merely varied by perforations, or the spaces may be so far enlarged as to bring the disc to a spoke-like form, the spaces, in this latter case, being so extensive as to bear a large proportion to the disc area.

Safety Floating Dress. J. H. Johnson, Lincoln's-Inn-Fields, and Glasgow.—This aquatic vestment has been patented in this country on behalf of M. Mazard, the inventor. It consists of a body-piece, and leggins of water-proof material in one piece, and with as few seams as possible. The leggins terminate in boots of caoutchouc, to which leather soles are attached. Arms are attached to the body of the dress, and these terminate in gloves. All the parts are joined together, so as to prevent the slightest ingress of water, and the only opening is at the neck, which is made sufficiently large for the entrance of the wearer, it being drawn as close as possible by a string, after the dress is put on. Increased buoyancy is obtained by the addition of a zone or belt of water-proof material, which is made to contain a quantity of carded cotton-wool. This material is employed on account of its peculiar properties, as it will not lose its buoyant power, or be saturated with water, even should the covering be accidentally ruptured. The zone is formed of greater bulk before and behind, the sides being flat, so as not to impede the action of the arms. This dress secures perfect safety, whether the wearer is a swimmer or not, and he may remain in the water for a lengthened period without wetting so much as his clothes, over which the floating dress may be worn.

EDITORS' JOTTINGS AND MECHANICAL RECORD.

APPLICATION OF GUANO.—We find the following article in a late number of the *Lawrence Home Review*:

"As I was passing by the fine estate of Mr. Rogers, in Danvers, formerly a part of the Derby Farm, my attention was arrested by the luxuriant growth of grass in his fields, so that I was induced to inquire what had been done to start it thus ahead of all other fields. The farmer told me it had been brought about by the application of liquids (urine of cattle) gathered under his stall, mixed with guano, and the whole spread upon the ground, by being pumped from a cistern into a cask set upon wheels, and scattered as is water upon streets. This application was made about four weeks since. Where the watering-machine passed is distinctly apparent, by the quantity and richness of the grass, no other dressing having been applied to the field this season. If my memory is right, Mr. R. more than doubles the quantity of his grass on several acres this season, simply scattering the urine thereon; and now by mixing it with a small quantity of guano, of good quality, the effect is most astonishing. It is too early in the season to say what will be the effect upon the crop, but I mention it that those who are curious in these matters may examine it for themselves. Much has been said of the benefits to accrue from *model farms*, where experiments can be tried, that individuals can not afford to undertake; but when men with ample fortunes undertake such experiments, and are willing that others should see them, they become *models* themselves, for the benefit of the community in which they live."

A MIRACLE OF ART.—There is on exhibition in Paris, at the present time, in *Rue Neuve-des-Petits-Champs*, (a long name for New-Littlefield street,) No. 5, one of the most remarkable pieces of masterwork which the union of art and science has ever produced. It consists of a picture about three feet square. This picture is made up of colors admirable for their beauty and boldness, but there is no *subject*. The most experienced eye can detect nothing but disjointed and half-formed approximations toward a coherent design. The most able artist sees there only the finest colors, but no one can tell what they are intended to represent. In the middle of the picture, which is horizontally placed, is a mirror formed by a copper cylinder, covered by a perfectly polished coating of silver. This mirror is usually veiled. So far there is little remarkable, and the greatest amateurs in painting would hardly consent to spend five francs on such an apparently profitless study. But it is impossible not to feel a glow of admiration when, on uncovering the mirror, there is represented upon it, in the brightest reflected rays, the whole scene of the Crucifixion. The partial coloring then takes a character of incontestible superiority, and presents to the astonished spectators a picture composed of six most perfect figures, depicted with a degree of boldness such as the master-painters alone knew how to impart to the subject which it was their glory to represent.

THE MANUFACTURING ENTERPRISE OF FITCHBURG, MASS.—Few places in this commonwealth have made such rapid progress in material prosperity as the fine town of Fitchburg. In 1850, according to the census of that year, the value of the manufactured articles produced in the town was a little rising $1,500,000. In 1853, as we are informed by Dr. Alfred Hitchcock, who has been investigating the matter, Fitchburg manufactured $2,000,000 worth of articles, of which about $500,000 was in paper, and $100,000 in steam-engines and machinery. The other fabrics were chiefly cotton and woollen goods, scythes, chairs, etc. In addition to this, three new mills will probably go into operation within the next three months, which will add a quarter of a million of dollars to the annual product of manufactured articles. There are within the limits of Fitchburg eleven miles of available mill-stream, (the Nashua river and its branches,) not more than one half of which is improved.

With such superior facilities for manufacturing purposes, and with the encouraging results already obtained, the industrious and enterprising people of Fitch-

burg may confidently look forward to a future of greatly increased prosperity, which will be as well deserved as it will be honorably gained. An important consideration in the growth of Fitchburg is the fact that it furnishes a steady and profitable home-market for the agricultural products of that section of Massachusetts, a fact which is doubtless fully appreciated by the farmers in that vicinity.

Model Farms.—A plan has been devised in Maryland, under the auspices of the State Agricultural Society, for the purchase and outfit of an experimental farm, and for the erection of an agricultural college thereon. It is to be a joint-stock concern, with a capital of one hundred thousand dollars, divided into four thousand shares of twenty-five dollars each—the holder or holders of forty shares of stock being entitled to be always represented by a pupil, free of all charges for instruction.

An attempt has been made to establish such an institution in the District of Columbia—an institution which at first shall be a county undertaking, but which may at some future day be rendered the nucleus for a national institution for industrial education, the application of the sciences to agriculture, the mechanic and useful arts. Several public-spirited gentlemen have interested themselves in the enterprise, and the prospects are that their labors will be rewarded with success.

Preservation of Roots.—Many kinds of roots, when stored in the cellar, are liable to heat and rot. This is especially the case with the ruta-baga turnip, and the sugar-beet. In storing these roots, I generally construct temporary bins fo their reception, around the sides of my cellar, in the following manner. I in the first place set some uprights one foot from the cellar-wall, and board up to the requisite height. Sleepers are then put down, and a floor laid, three or feet in width; the front is then put up, and the ends. The boarding should be open, in order to secure as thorough a ventilation of the roots as practicable, and hence narrow boards are preferable to wide ones. After storing the crop, the cellar should be left open for several days, and then opened frequently for a few hours daily, till the weather becomes quite cold. In this way roots may be preserved without any liability of heating. Potatoes are rarely injured by fermenting; they are much more liable to be deteriorated by drying, and the action of light. A moist, dark cellar is the best for their preservation.—*Cor. Ger. Tel.*

General Agency.—The publisher of *The Plough, the Loom, and the Anvil*, believing it in his power to be of essential service to the readers of that journal, in the purchase or sale of various articles, and the transaction of various kinds of business, would announce to them that he is ready to execute any such commission which he may receive, including the purchase of books of any description; implements connected with agricultural, manufacturing, or mechanical operations; artificial manures; farm and garden seeds, etc., etc. One of the gentlemen connected with the journal is a proficient in music, and experienced in the selection of piano-fortes, flutes, etc., and will execute orders in that department.

He will also act as agent in the purchase and sale of Real Estate.

☞ Particular attention to business connected with the Patent-Office.

Letters of inquiry on these matters will be promptly attended to.

NEW BOOKS.

Ida Norman; or, Trials and their Uses. By Mrs. Lincoln Phelps. 2 vols. in one. New-York: Sheldon, Lamport & Blakeman. 1854.

This is a book that interests and at the same time instructs the reader. The design of the author was to inculcate good moral teaching in a pleasing form, and she has succeeded in a remarkable degree. The scenes commence with the days of school-going, and succeed each other very naturally, through foreign travel, to that universal goal of fictitious writings, love and marriage. We commend the volumes to all our readers.

A JOURNEY TO CENTRAL-AFRICA; or, Life and Landscapes from Egypt to the Negro Kingdoms of the White Nile. By BAYARD TAYLOR. With a Map and Illustrations by the Author. New-York: G. P. Putnam & Co. 522 pp. 12mo.

THE reputation of Bayard Taylor as a writer is too well known to need description or commendation from any quarter. The ease and familiarity of his style is so complete that the reader can not fail to enjoy it. He goes into no learned disquisitions, nor deep ethnological researches, but gives you in this volume, in good shape, the very thing described in the second part of the title above cited. His illustrations are good, but we hope we shall have Mr. Taylor's physiognomy, unembarrassed with an "oriental costume," in some forthcoming volume. The publishers deserve high commendation for the manner in which they have executed their part of the labor.

HERMIT'S DELL, from the Diary of a Penciller. New-York: J. C. Derby. 285 pp., 12mo

THIS is a volume of "desultory pencillings," which "are woven in somewhat fanciful web," as the author says in his dedication. He sometimes "weeps with the sad, and laughs sometimes with the gay;" but he has given us no connected "thread," not even one long enough to excite in the reader any especial interest, either in its past or future. The hermit, who might be expected to act as heroine, is mentioned but once or twice, and in this she fares like most of the numerous characters introduced to the reader. The publisher has done his part admirably. Few works of this class are so handsomely executed.

THE INEBRIATE'S HUT; or, The First Fruits of the Maine Law. By Mrs. S. A. SOUTHWORTH. Third Thousand. Boston: Phillips, Sampson & Co. 1854.

THIS work is not without its occasional faults of rhetoric, but they are comparatively unimportant. In general it is well written. The characters represented are drawn with a bold hand, and together they are woven into a narrative which excites a deep interest in the reader. On this subject, imagination must borrow from actual life its highest, deepest colorings. The fall of Mr. Lee has too many prototypes for any unfavorable criticism; and his rising again, surrounded on all sides by temptation, has hitherto proved not only a rare event, but also a Herculean task. But under such protection as this law offers, the victim of appetite, and his friends, may at least indulge hope. The perusal of this little volume will set forth the claims of this law very clearly to the perception of the reader, while the story will deeply excite his sympathies.

KANSAS AND NEBRASKA: The History, Geographical or Physical Characteristics and Political Position of those Territories, etc. By EDWARD E. HALE. Boston: Phillips, Sampson & Co. New-York, J. C. Derby. 1854. 12mo, 247 pp.

THIS volume is the result of an examination of numerous authorities of recent and of earlier date, and exhibits thorough research on the part of the writer. Much of the volume is historical. The geography of the country is illustrated by a good map. It also gives an account of the Emigrant Aid Companies, with directions to emigrants. To this class it is very useful as a book of reference, as well as of general information.

LECTURES ON ARCHITECTURE AND PAINTING, delivered at Edinburgh in November, 1853. By JOHN RUSKIN, etc. With Illustrations, drawn by the Author. New-York: John Wiley. 1854. 12mo, pp. 189.

THIS small volume is rich in learning, rich in science, and rich in taste. Not a page could be spared, and we only wish that it was much more extensive than it is. There are, however, several pages of "addenda" to three of the four lectures, in which the more concise statements in the lectures are expanded and illustrated, which greatly increase the value of the book. We purpose to make liberal extracts from this volume in our subsequent numbers. We wish every one of our readers had a copy of the work, especially those who build either for themselves or others.

THE POLAR REGIONS; or, A Search after Sir John Franklin's Expedition. By Lieut. SHERARD OSBORN, Commanding H. M. Steam-Vessel Pioneer. New-York: A. S. Barnes & Co. 12mo, pp. 216.

IT would be difficult to write a work on this subject, truthfully, which would not be highly entertaining. The scenery to be described is so strange and so grand, the perils are so sudden and so great, the sufferings, even, so peculiar, that curiosity at least is kept in constant activity. This volume is a journal, in narrative form, well written and quite instructive. At the present juncture, when news, which has some claim to authenticity, has reached us, of the death of the heroic adventurer for whom the writer and his companions were in search, the volume has a peculiar interest.

EMILY HERBERT; or, The Happy Home. By M. J. MCINTOSH, author of Blind Alice, Jessie Graham, Florence Arnold, etc., etc. New-York: Appleton & Co., pp. 165, 16mo.

MISS MCINTOSH aims not at writing a readable book only, but one that shall exert a good moral influence. With those who thus aim high, and whose minds are highly cultivated as that of Miss McL., success in this higher aim naturally includes success in the lower. This little story is an illustration of this. The value of principle, and the consequences of a want of it, are well set forth, and without any intricacy of plot or astounding development, possible and even probable results from given courses in everyday life are familiarly set forth, in purest Saxon, and while the young are especially in the writer's view, all ages will read this little tale with pleasure and satisfaction.

TRAVELS IN PERU, on the Coast, in the Sierra, across the Cordilleras and the Andes, into the Primeval Forests. By Dr. J. J. VON TSCHUDI. Translated from the German by THOMASERIA ROSS. Complete in one volume. New-York: A. S. Barnes & Co. 1854. 12mo, pp. 354.

THIS entertaining volume is a plain statement of facts deemed worthy of record, whether in the country or in the manners, habits, appearances, etc., of the inhabitants, in a tour undertaken by this distinguished European traveller, for the purpose of making zoological investigations. The author is a man of great learning, careful observation, and of peculiar tact in description. Hence this volume is entitled to especial consideration. Part of the territory described is ground hitherto unoccupied by former tourists.

PERUVIAN ANTIQUITIES. By MARIENO EDWARD RIVERO, Director of National Museum Lima, etc., and JOHN JAMES VON TSCHUDI. Translated from the original Spanish, by FRANCIS L. HAWKS, D.D., LL.D. New-York: A. S. Barnes & Co. 1854. 12mo, pp. 306.

ONE of the authors of this volume is a native Peruvian, and the other, the eminent author of the work last described. It is worthy of attention, not merely from the deservedly great reputation of its writers, but for its intrinsic merits as an able and correct representation, not only of the Peru of ancient times, as illustrated by its remarkable architectural remains, but of Peru also brought down to a period as late as 1851, by those who are quite competent for this service. It is the result of many years' labor. The work is also well illustrated, by a selection from fifty-eight large plates, most of them colored, and well executed, which, in a separate binding, accompany the original work. The views taken are learned rather than popular, embracing personal forms, languages, government, culture, religious ceremonies, state of the arts, etc. The last chapter is on ancient monuments, with several illustrations.

THE PRACTICAL MECHANIC'S JOURNAL.

THE October number of this excellent journal is on our table. It well sustains the high character we have given of the previous numbers. Stringer & Townsend, of this city, are the American agents.

THE CITY-SIDE; or, Passages from a Pastor's Portfolio. Gathered by CARA BELMONT. Boston: Phillips, Sampson & Co. New-York, J. C. Derby. 1854. Small 8vo, pp. 297.

THIS is an offset to Shady-Side, and gives the experience of a minister who proves himself a man of excellent judgment, and every way well fitted for his place. Though he encounters some unpleasant passages, he neither vexes himself nor others on account of them, but goes on his way, like a man, as he is, neither exhibiting cowardice on the one hand, nor pugnacity on the other. His wife is also just what she ought to be, a remarkable coincidence. It is a useful book—an entertaining narrative—remarkably free from faults of rhetoric, and well worthy a careful reading.

NEW MUSIC.

MESSRS. WM. HALL & SON have recently published a large number of pieces, many of which are very fine. Among them we would name. *Spring Flowers*, a brilliant waltz, by M. Iucho; *Dream Life*, Schottisch, by Francis H. Brown; *The Mountain Zephyr*, Polka, by J. A. Fowler; and *The Russian Quadrille*, by H. N. Goodban.

Several vocal pieces are very beautiful. *Dreaming of Thee, for ever; Annie dear, good night; I love and I am happy;* are all composed by W. V. Wallace, and are very sweet airs, and not difficult. *My Home in Old Kentuck*, and *Down the River, down the Ohio*, are excellent in their way; while a long list of compositions, of other styles, are equally worthy of attention.

NOTE.—Grisi and Mario continue to delight our city audiences with their wonderful ability. The more we hear Grisi, the more we are satisfied that, as an *actor and singer*, she is at the very head of her profession, the world over.

List of Patents Issued

FROM SEPT. 5 TO OCT. 3.

Leander W. Boynton, of South-Coventry, Conn., improvement in machines for cleaning wool.

Hezekiah C. Pridgham, New-London, Conn., and James M. Stewart, Norwich, Conn., apparatus for turning the leaves of books.

Daniel Carpenter, Brooklyn, N. Y., improvement in surface-condensers for marine-engines.

Nathaniel Colver, Detroit, Mich., improvement in boots and shoes.

John B. Cornell, New-York, improvement in metallic slat-shutters.

Wm. Craig, New-York, improvement in oscillating-engines.

Perry Dickinson, Woodcock township, Pa., improvement in mill-stone dress.

Joseph Gatley, Rome, N. Y., improved piston or valve for rotary-pumps, etc.

Warren Gale, Troy, improvement in straw-cutters.

Abram J. Gibson, Clinton, Mass., improvement in coupling for carriages.

John L. Maxwell, Baltimore, Md., improvement in ventilating ship-timbers.

Seymour N. Marsh, New-York, improvement in trusses.

John W. Middleton, Philadelphia, improved method of applying heat to dilate gases, for the purpose of elevating water.

Gilbert Maynard, Greenfield, Mass., improvement in corn-shellers.

James McGregor, Jr., New-York, improvement in cooking-stoves and ranges.

Andrew Mayer, Philadelphia, improved regulator for gas-burners.

John W. Middleton, Philadelphia, improved apparatus for distributing fluids.

Ephraim Morris, South-Bergen, N. J., improvement in apparatus for determining the weight of cargoes in vessels.

Newell North, Stow, Ohio, improved spoke-machine.

Wm. B. Osborn, Milton, N. Y., improvement in breech-loading cannon.

Jos. Phares, Cincinnati, improvement in tailors'-shears.

Philander Shaw, Abington, Mass., improvement in sewing-machines.

Samuel Sheldon, Cincinnati, Ohio, improvement in portable grist-mills.

Lorenzo Simonds, Boston, improvement in palate for artificial teeth.

Don Carlos Smart, Cambridgeport, Mass., improvement in curtain-fixtures.

Franklin G. Smith, Columbia, Tenn., mode of operating fire-engines.

Henry W. Adams, New-York, improvement in breech-loading fire-arms.

Elliot C. Badger, Warner, N. H., improvement in machines for dressing mill-stones.

Wm. Black, Alleghany, Pa., improvements in steam-engines.

Jas. C. Burnham, West-Jefferson, Ohio, improvement in maize-harvesters.

Chas. J. Conrad, Lower Augusta township, Pa., for method of sawing shingles.

John Davis, New-Bedford, improvement in telegraphic keys.

Henry Eddy, North-Bridgewater, Mass., improvement in bee-hives.

James R. Napier, Glasgow, and William J. M. Rankins, Goovan, Scotland, improvement in air-engines.

Wm. P. Goodmand and Samuel Morris, Springtown, Ind., improved portable staging.

Thaddeus Hyatt, New-York, improvement in vault-lights.

Wm. G. Elliott, Blisworth, Eng., improvement in making slag-ware.

Benjamin Pulghum, Richmond, Ind., for sawing-machines.

John W. Middleton, Philadelphia, for tidal or current hydraulic ram.

William H. Morrison, Marion county, Ind., for fire-arms.

Henry B. Myer, Buffalo, for mode of converting the backs of car-seats into beds or lounges.

A. N. Newton, Richmond, Ind., for breech-loading fire-arms.

Isaac Pitman, Reading, Mass., improvement in rosin-oil lamps.

Marvin Smith, New-Haven, Conn., improved water-meter.

W. G. Sterling, Bridgeport, Conn., improvement in counting-machines and machines for indicating motion.

John Tapley, Frankfort, Me., improvement in pumps.

Wm. Thornley, Philadelphia, improved safety-washer for securing wheels to axles.

John J. Weeks, Buckram, N.Y., improvement in sausage stuffers.

Archibald Winter, Rondout, N.Y., improved machine for sawing firewood, etc.

Loren J. Wicks, New-York, improved method of operating guide-rollers and feed-clamps in sawing-machines.

Benj. F. Upton, Bath, Me., improved apparatus for polishing daguerreotype plates.

Abner Whiteley, Springfield, Ohio, improvement in grain and grass-harvesters.

Wm. H. Akins and Jos. C. Burritt, Utica, N. Y., assignor to W. H. Akins, aforesaid, improvement in calendar-clocks.

Edward L. Seymour, New-York, assignor to Daniel Brown, of same place, improved gold-separator.

John Williams, Hartford, Conn., assignor to P. Curtis & Co., of same place, improvement in calendar-clocks.

N. Aubin, Albany, improvement in gas-generators.

Fordice Beals, New-Haven, improvement in fire-arms.

Edward Brown, Rindge, N. H., improvement in elastic goods.

Schuyler Briggs and John G. Talbot, Sloansville, N. Y., improved neck-yoke.

Gardiner Chilson, Boston, improved hot-air furnace.

Geo. Copeland, Danville, Me., improvement in clasps for loom-harness.

Jos. A. Corwin, Newark, N. J., improvement in knitting-machines.

John Dame, Portsmouth, N. H., improved parrel and bow.

John Drayton, Buffalo, improvement in bedstead-fastenings.

Alex. Hall, Loydsville, Ohio, improvement in electric-clocks.

Wm. Graham and Lawrence McLaren, Philadelphia, improvement in railroad car seats.

Moses E. Halsey, New-York, improvement in chair-frames.

Aaron L. Hatfield, Lewisburg, Pa., improvement in machines for adding numbers.

Thos. Hardman and Albert Voss, Pittsfield, Vt., improvement in whiffletrees.

Henry Hockstrasser, Philadelphia, improved machine for paging books.

J. F. Keeler, Cleveland, improvement in platform-scales.

Chas. R. Landman, New-York, improved safety-lamps.

John Baptiste Laville, Paris, France, improvement in machinery for felting hats or hat-bodies. Patented in France, Aug. 17, 1852.

Paul Moody, Camden, N. J., improvement in connecting a series of car-brakes.

Septimus Norris, Philadelphia, improvement in running-gear of locomotive-engines.

Jos. Stockton, Warren county, Ky., improvement in springs to the knives of straw-cutters.

John J. Weeks, Oyster-Bay, improvement in harvesters of grain and grass.

Moses D. Wells, Morganstown, Va., improvement in washing-machines.

Joel Wisner, Aurora, improvement in washing-machines.

Arad Aldrich, Princeton, Mass., assignor to J. L. Cooper, Worcester, Mass., improvement for cutting irregular forms.

D. W. Gitchell, Rahway, N. J., assignor to J. C. Wagstaff, New-York, improvement in uniting bats for making seamless felt garments.

William P. McConnell, Washington, improvement in process for making illuminating-gas from wood.

Abner Chapman, Fairfax, Vt., improvement in paddle-wheels.

Chas. M. Cresson, Philadelphia, improvement in the form of gas-retorts.

Victor Beaumont, New-York, improvement in steam-gauge.

Thomas Batchelder, Candia, N. H., machine for manufacturing frames for wood-saws.

Patrick S. Devlan, Reading, improvement in brick-machines.

Richard Deering, Jr., Louisville, improvement in circular stone-saws.

Stephen J. Gold, New-Haven, improvements in warming houses by steam.

R. L. Hawes, Worcester, improvements in drying cloth.

Thos. J. Harris, Jr., New-York, improvements in fastenings for garments.

J. Kimbell, Zanesville, Ohio, improved dumping-car.

J. Y. Leslie, Cincinnati, improvement in knitting-machines.

Jacob J. Lownds, New-York, improved pen and pencil-case.

Francis H. Smith, Baltimore, improvement in brick-machines.

Wm. H. Robertson, Hartford, improvement in machines for dressing stone.

Wanton Rouse, Taunton, improvement in self-acting mules.

Andrew Rankin, Newark, improvement in making hat-bodies.

Silas S. Putnam, Boston, improvement in curtain fixtures.

Samuel Peck, New-Haven, improvement in the manufacture of daguerreotype cases.

Wm. Palmer, New-York, improvement in apparatus for starting railroad-cars.

Zachariah M. Paul, Alexandria, La., improvement in brick-machines.

Spencer Moore, Central-Bridge, N. Y., improvement in the feeding hoppers of threshers and separators of grain.

John Mabie, English Neighborhood, N. Y., improved pen and pencil-case.

Wm. C. McKee, Philadelphia, improvement in railroad drawbridge, and switch-telegraph.

Benj. B. Webster, Boston, improvement in mosquito-curtains.

Ervin B. Tripp, Concord, improved printing-press.

Richard A. Tilgham, Philadelphia, improvement in processes for purifying fatty bodies.

Joseph Thatcher, Philadelphia, improvement in looms.

John Wilcox and S. H. Whitridge, Philadelphia, improvement in sewing-needles.

John E. Grant, Charlestown, Mass., assignor to Cyrus Carpenter and Augustus D. Shaw, Boston, Mass., improvement in hot-air furnaces.

Levi Van Hoesen, of New-Haven, assignor to the New-Haven Iron Railway Company, New-Haven, aforesaid, improvement in piano-forte stools.

Plough, Loom, &c.

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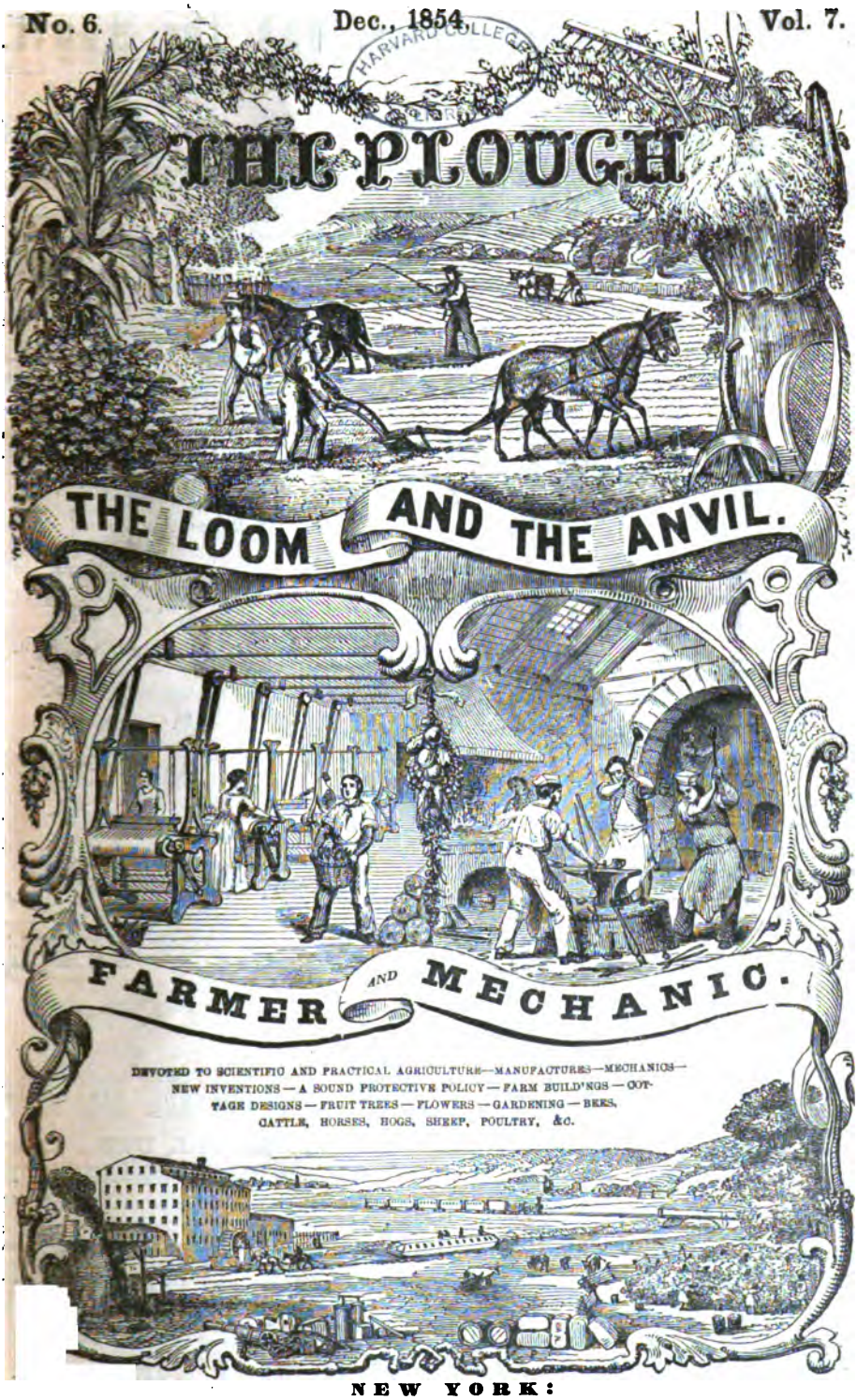
No. 6. Dec., 1854. Vol. 7.

HARVARD COLLEGE

THE PLOUGH



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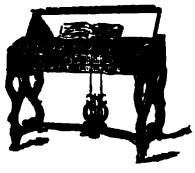
A MUSICAL INSTRUMENT FOR EVERY FAMILY.



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B. F. TOBIN [illegible].

Feb 6.
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The Plough, the Loom, and the Anvil.

Vol. VII. DECEMBER, 1854. No. 6.

BENEFITS OF FAIRS.

No good thing is useful in one respect only. It is one of the elements of all forms of moral agencies, that each acts in a variety of modes—some direct, some indirect.

Agricultural or Mechanic Fairs belong to this class. That the *tendency* is good, no one now disputes. But the undetermined question is, how to secure the greatest good.

Fairs are useful, in that they collect thousands of people to see and admire better things than they are in the habit of seeing at home. The wheat-grower sees more successful crops; the hay-maker finds that a distant neighbor gets twice as many tons from the same surface that he does; the dairyman finds better butter or cheese than he himself makes; some body exhibits better cows, better swine, etc., etc., than he sees at his own homestead. This excites his ambition, and perhaps, at the next fair he will win the first prize.

Fairs are useful, also, in extending one's personal acquaintance. This not only increases our social enjoyment, but it promotes good citizenship. The discussions sometimes forming part of the exercises, call out most emphatically the thoughts that were buried in the mind, and which existed scarcely more than in embryo. And though those thoughts may be somewhat crude, and unable to bear the tests applied to them, the man returns to his home wiser and more thoughtful than he was before.

But more than this, and than all these, perhaps, is another consideration. The occasion is one with which the individual has a direct personal connection. It is *our* fair, and, to some extent, *our* horses, *our* cattle, *our* crops, and even *our* oration; and as all these are higher and broader and deeper and grander, perhaps, than could be found at the homestead, *its* dimensions may naturally be extended, and its value enhanced, by larger, clearer, loftier views, on the part of the owner or occupant, than had been before entertained. What if the gain be but small at each anniversary? The drops, by and by, will become a huge mass of water. The scattered thoughts, at first exceedingly superficial, will have been matured into a well-digested system. The bookless, thoughtless, thriftless farmer, unknowing and unknown beyond his own few acres, appears as a *practical writer* in agricultural journals, is engaged in important experiments, and has actually discovered very important truths, which he is quite competent to support among his peers. How many such cases, in our own circle of acquaintance, could we enumerate!

This improved farmer is also a better citizen. He better understands the bearing of politics, and of the administration of civil matters upon industrial pursuits. He has a higher estimate of labor. It is labor skillfully con-

ducted, the combination of head-labor and hand-labor, that has made him what he is. This combination it is which has converted lifeless matter into efficient and tireless workers. The union of these two, the head and the hand, with scientific truth, has devised, created, and adapted to every form of severe labor, not only modern horse-power, but the steam-engine and the water-fall, and, to some extent, other agencies, as electricity and magnetism. One step only from these is the telegraph and the other higher results of scientific discovery. Into this system of mind and progress, the mere laborer of the past has been introduced, and his progress naturally is onward, though with various success. The movement, however, is one—there is no counter current. But for fairs, subscribers to our agricultural journals would have been far less numerous, and the contributors to them would have been almost confined to the occupants of the editorial chair. He who has read agricultural science, has acquired a taste for other science, for reading, and ere long he is comparatively an educated man.

Exaggeration is not our habit, but our whole disposition is set against it. Nor have we herein unduly magnified the claims of these annual convocations. The more this train of thought is considered the more important will it appear. What a vast difference is now visible to all eyes, between the farming interest of thirty or forty years ago, and of the present! We do not say that agricultural exhibitions have wrought out all this, but we have no idea that any such change could be expected without the instrumentality of these appointments. We once saw some five hundred wheelbarrows, busily at work, carrying away the earth and rocks from the spot where the waters now flow which set in motion every spindle in Lowell, and yet we never have supposed that those wheelbarrows spun or wove those tons of fabrics. But they were a part, and an essential part, of the natural, the obvious means by which those ultimate results were attained. Fairs bear the same relation to these other results, these almost entire revolutions in our field labors.

One single process, by which the value of the farming interest has been wonderfully enhanced in many sections of the country, which has been chiefly carried on by the agency (the wheelbarrow) of agricultural societies, is the improvement of farm-yard stock. The importation of foreign animals has been chiefly perhaps, by individuals. But this movement was in many cases prompted by this associated action, and it has been by the management of these societies that the benefits of these animals have been so widely distributed over the country. The actual value of this one movement, though *for want of statistical records, in the absence of agricultural societies*, it can not be accurately stated, must be immense. The national census can not throw much light on this subject, for it is not acknowledged as of competent authority, but it may shadow forth something on this point. Let us turn to it.

The value of neat-cattle in 1840 was about fifteen millions of dollars. In 1850, it was more than eighteen and a quarter of millions. The value of swine has increased quite four millions. So the quantity of the annual crops is increased, and by what instrumentalities, if these societies have not had a material agency?

In determining the best modes of conducting this efficient machinery—for the wheelbarrow has become a great system of wheels, levers, and springs, with numerous attractions and repulsions—regard should be had to all these forms and modes of influence.

It is desirable that all the benefits of such organizations and exhibitions, as far as is possible, should be free. We would have no sentinels on these

grounds, challenging any real inquirer; and even he who visits them from the idlest curiosity, may go home an earnest and an apt scholar. The payment of twenty-five cents admission-fee may or may not hinder the widest spread of this healthful influence. The expediency of such a measure must depend much on the necessities of the society, and the condition of the community. When a train is well under way, small obstacles have no *perceptible* influence in retarding its motion. Perhaps this is strictly analogous to the admission-tax at these yearly gatherings. There is, however, one view in which such arrangements are decidedly unhappy in their effects. He who is doomed to pay for *looking on*, if it be but a sixpence, is an *outsider*, a stranger—a mere visitor. Elsewhere, though a hundred miles from home, he may generally examine and inquire into all such matters without hindrance. But here, in his own county, perhaps his own neighborhood, he must buy the right to see! This is not the way, perhaps, to kindle a desire for participation in such movements, and most surely it is not the way to cultivate a taste for excellence in these departments, nor to identify the spectator with the exhibition. The very men who do not care even twenty-five cents' worth for the whole show, might become most efficient members, and voluntarily subscribe, by and by, as many dollars, to aid its operations.

It may often be wise to locate such exhibitions even in the most uncultivated neighborhoods. Let Mohammed go to the mountain. Let those who have the light carry it to those who sit in darkness, without expecting that night will make effort to overtake the day. Let even personal invitations be addressed to all the people, to come with their households, and enjoy the occasion. This labor would be something, but the result would often be ten-fold and a hundred-fold more. There is magic power in personal courtesies of this sort, however one may theorize about it.

This suggestion is opposed to the idea of *permanence* in location, and would prohibit large outlays for "beautiful grounds" and "extensive exhibition-rooms," and it would hide, too, the *pride*, which is perhaps quite efficient in erecting such structures. At any rate, it would save the cost of *building* them, and prevent even the thought of large expenditure on what is for *use* only, and that for three *or* four days out of more than three hundred. Whether this, *on the whole*, would be an evil, is for each one to decide for himself.

The form and the subject-matter of the various reports belonging to such occasions, should be governed by these considerations. They are not, or should not, be designed just to inform the public that A's beans were better than B's, or C's pigs better than D's, which is a matter of very little consequence to the public, but they should add to this the profitable knowledge of the species of bean, the mode of cultivation, etc., the breed of pigs, and the manner of feeding them. So throughout. The report on pigs is often made scarcely more than a jargon of hoggish wit, or of human pedantry. If not thus rationally conducted, all notice of *this* department of *culture* had better be omitted.

But we are not writing an address. We intend nothing but a few hints, which the observation of the present and past years has suggested. We wish some of our readers would take up this subject, and give it a careful and thorough discussion. We have but suggested some of the topics belonging to this department of agricultural improvement.

RAILROAD TO THE PACIFIC.

"THE Great Southern Convention" has had a very earnest, and, in our judgment, a most extraordinary sort of a discussion, in reference to an outside "ultra-Southern" railroad to the Pacific. Some gentlemen presented very clear and sensible views on the subject, and many of them certainly exhibited great ability. We doubt whether any convention of equal numbers, held for many years, could compare with this in point of talent. But with all this ability, the views taken by some of the members are very strangely *ultra* in more senses than one. There seems no disposition among this portion of the convention to secure a road that will build up any other States than those there represented, but rather one that shall be as far South, as *ultra South* as possible. This, we need not say, is all wrong, and what no considerable section of the country will indorse.

One scheme, proposed by Mr. Albert Pike, of Arkansas, a *Northern man by birth*, (and our Northern men are by far the most *ultra* Southern,) and one whom we personally well knew in the place of his nativity, recommended that the Southern and South-western States, fourteen in all, should, by act of Legislatures, grant each the sum of two millions of dollars, and put the road through at once. An act of incorporation from the State of Virginia, making these States an organized company, was contemplated as part of the plan, though how the corporation thus formed were to act was not made to appear. But beside this, "individuals, cities, and the Indian tribes," were to be admitted as stockholders. Whether these cities and tribes were to appear in person, in the corporate meetings, with the other members, the States, was not explained. With some men, no means necessary to carry out their favorite projects are inexpedient or unconstitutional. If ever a plan brimful of absurdities and lawless projects was presented for approval, this is that one. Indeed, while it was under discussion, very few regarded this project with any favor. Gov. Jones, of Tennessee, presented grave objections to it. Mr. N. D. Coleman, of Mississippi, described it as "visionary, utterly impracticable and unmanageable in its details." This gentleman suggested a route in connection with the Vicksburg, Shreveport, and Texas Railroad Company, the charter of which has been granted by the State of Louisiana, with a capital of four millions. His plan, a very sensible one, contemplated a route through Texas, New-Mexico, Sonora, and California, to San Diego, between 32° and 33° of latitude through its entire course. The same views, in respect to the resolution of Mr. Pike, were expressed by Mr. T. A. Marshall, of Mississippi, Judge Nesbit, of Georgia, who regarded it as utterly impracticable and emphatically sectional; by Lieut. Maury, Hon. W. C. Dawson, President of the Convention, etc., etc., and yet the resolution was adopted, by 13 yeas and 0 nays! We can not understand this. The vote was by States. But we would invite especial attention to some remarks of Mr. Dawson, which are reported as follows:

"And here let me suggest that if Great Britain, or any other foreign power, desired to run a railway through any territory of the United States, would we consider that any State, or any government within the limits of such State, would have the right to negotiate for such a purpose? Or I will put the case of any State entering into a contract with any foreign power to build a railroad through their country—do you suppose such power would respect such contract in case of war? Why to suppose it is sheer folly. And supposing that the State making such contract with Great Britain was to violate that contract, and Great Britain was to seek to enforce her rights,

you know what the consequences would be." Hence he urged the propriety of asking of Congress, and not of Congress only, but the treaty-making power—the President and Senate—to negotiate with Mexico for this route. These opinions must commend themselves to every sensible mind. The idea seems to us preposterous, that any foreign state will enter into a contract with a corporate company belonging to a foreign government, for the sale of land two or three hundred miles in extent, through the very heart of the country; and if they did, the contract would be violated whenever the interests of the state seemed to demand it. Should such an event happen, to what could the company resort for redress? They could go nowhere but to the government of their own country, like any other citizens whose property had been unjustly taken from them, and persuade them to undertake to *negotiate*, and on failure of long-continued negotiation, to attempt—we know not what else. It depends very much *on circumstances*, whether our government will take efficient means to redress the wrongs inflicted on our citizens.

This liability to loss would always operate to make such stock unsalable, and the company would experience constant embarrassment in the management of the road.

But there is a strong doubt in our mind, whether a government has a right to grant to foreigners a right of way over the land of individual proprietors without their consent. We know that where the public interests of the state or of the community call for it, property may be taken and used in almost any manner. But this power exists only where the *public interest* demands its exercise, and it would seem to be a tremendous perversion of these terms to claim, on that ground, the right to seize private property to build a road exclusively for the benefit of aliens, and perhaps to the actual detriment of the community through which it passes. In a war, or in any filibustering movement, such roads would be hazardous in the extreme. Many other possibilities, not to say probabilities, will suggest themselves to every reader. Such considerations stamp any such action as reckless and insane. The only practicable mode of effecting such purpose with *foreign corporations*, is through the agency of the treaty-making power, as suggested by Mr. Dawson.

But there is, perhaps, a still better way. And that is, by the plan so common in our country, of securing the longest railroad communications, by means of several corporations, each granted to its own citizens, by its own government, for the public good, with perhaps the power of consolidation. The time is not far distant when the government of Mexico, and of other States between us and the Pacific, will grant charters for such objects, so far as they may be thought beneficial to themselves. This state of things will have arrived long before the tens of millions required for such a road, on the route contended for by Mr. Pike and his associates, will be secured by a *bona-fide* subscription. There is too much hazard to be encountered in the present unsettled condition of the countries through which it would pass, to give currency to any such project.

Mr. Pike speaks of the carrying out of this measure as one "in which the interest of the whole country is involved." We think that whoever builds this road will be public benefactors at the cost of their own pockets. It might be years before it would pay, though, if unmolested, it would become, by and by, no doubt, excellent property. But we do not believe that any one of the routes spoken of is essential to "the interests of the whole country." The public convenience only requires some railroad to the Pacific. We do not think that a departure from an air-line, even though it takes twenty-four or forty-eight hours more in travelling the distance, is fatal to its claim upon the public regard. Whether the Southern, the central, or

the Northern routes shall be preferred, depends chiefly upon their *availability*, to borrow a term of the politicians. Either, when completed, will answer the demands of the "whole country," provided the Western termination shall be such as to meet the business demands of the mercantile world. That one point, the Western terminus, the grades being what they should be, we regard as more important than any one question, or indeed than all other questions, touching the details, combined. Hence we would gladly aid either of these projects, saving only this, that we should prefer that which would unite with its iron bands the greatest number of States, and accommodate the greatest number of citizens and of settlements, thus increasing and multiplying mutual attractions and promoting unity of interest and of action. We think this more important even than the saving of a few hours of travel or a few dollars of expense to the traveller. Labor is not lost that binds together a people, who, like ours, are far too thoughtless of their mutual dependence.

But we do not fear too hasty action. Gentlemen may assemble in convention, and resolve as they please. This is all well, and does good by drawing public attention to the subject. But these very members will not enter into any contracts involving personal responsibility till they see their way clear. Nor will they risk their property in any scheme, when they see that others, having better facilities, will by and by step forward and execute some other plan which shall deprive them of all hope of pecuniary gain. In other words, they will demand reasonable evidence that no rival route shall make their stock comparatively worthless.

VALUABLE STATISTICS.

THROUGH the courtesy of Mr. De Bow, we have received several pages of proof-sheets, in advance of publication, of the agricultural and mechanical productions of the several States, from the census returns of 1850. Some of these we present our readers. The first is Table 186, and contains the amounts of the

AGRICULTURAL PRODUCTS OF THE UNITED STATES—1850 AND 1840.

Agricultural Products.	1850.	1840.	Agricultural Products.	1850.	†1840.
Horses,	4,336,719	4,335,609	Butter, pounds,	313,245,306	
Mules and asses,	559,331	horses &	Cheese, "	105,535,893	
Horses, asses, and mules,	4,896,050	mules.	Butter and cheese,	418,881,199	* 433,787,008
Milch cows,	6,385,094		Peas and beans, bushels,	9,219,901	
Working oxen,	1,700,744		Market gardens,	$5,280,050	$2,601,196
Other cattle,	10,293,069		Nursery products,		$599,534
Total neat-cattle,	18,378,907	14,971,586	Orchard "	$7,723,186	$7,356,904
Sheep,	21,733,230	19,311,374	Beeswax & honey, pounds,	14,853,790	Wax, 628,903
Swine,	30,354,213	26,301,293	Poultry,		3,344,410
Value of live stock,	$544,180,516		Family goods,	$27,493,644	$20,023,389
Value of animals slaughtered,	$111,703,142		Cords of wood,		5,088,891
Wheat, bushels,	100,485,944	84,823,272	Flax-seed, bushels,	502,312	95,251 tons
Rye, "	14,188,813	18,645,567	Flax, pounds,	7,709,676	hemp and
Oats, "	146,584,179	123,071,341	Dew-rotted hemp, tons,	33,193	flax.
Indian corn, bushels,	592,071,104	377,537,875	Water-rotted " "	1,678	
Irish potatoes, "	65,797,896		Maple sugar, pounds,	34,253,436	155,100,809
Sweet potatoes, "	28,268,148		Sugar, cane, hogsheads,	237,133	pounds.
Total, "	104,066,044	108,298,000	Molasses, gallons,	12,700,991	
Barley, "	5,167,015	4,161,504	Cotton, bales,	2,445,793	1,976,198
Buckwheat, "	8,956,919	7,291,743	Rice, pounds,	215,313,497	80,841,422
Hay, tons,	13,838,642	10,248,108	Tobacco, "	199,752,655	219,163,319
Hops, pounds,	3,497,029	1,388,502	Wool, "	52,516,959	35,802,114
Clover-seed, bushels,	408,978		Silk cocoons, pounds,	10,843	61,652
Other grass-seeds, bushels,	416,831		Wine, gallons,	221,249	†124,734

* Dairy products.

† Amounts produced by individuals less than a bale, hogshead, or ton of any agricultural product, where these measures are adopted, are not aggregated or reported. Hence a large production of such articles escaped enumeration. This is important to be observed in reading the county tables.

The following shows the value of the products therein enumerated, being Table 190, and entitled,

VALUE OF THE AGRICULTURAL PRODUCTS OF THE UNITED STATES—1850.

Products.	Value.	Products.	Value.
Indian corn	$296,035,552	Live stock, over one year old—annual product	$175,000,000
Wheat	100,485,944	Animals, slaughtered	55,000,000
Cotton	96,608,720	Poultry, on the basis of 1840	13,000,000
Hay	96,870,494	Feathers	2,000,000
Oats	43,975,353	Milk, (not included in butter and cheese,)	7,000,000
Butter	50,135,348	Eggs	5,000,000
Potatoes, Irish	26,319,158	Cord-wood, on the basis of 1840	20,000,000
Potatoes, sweet	19,184,074	Home-made manufactures—one half for agricultural part.—*Tucker*	18,746,333
Wool	15,755,087	Small crops—basis of Rhode-Island, for onions, carrots, etc.	5,000,000
Tobacco	13,962,686	Residuum of crops not consumed by stock. Corn-fodder, cotton, seed, straw, rice-flour, and manure, (Patent Reports,)	1,000,000,000
Cane sugar	12,378,850	Cattle, sheep, and pigs, under one year old	50,000,000
Rye	7,903,847		1,284,383,932
Orchard products	7,728,186	Add for orchard and garden products of cities, not included in above—milk, butter, poultry, horses, cows, etc., in cities and towns	15,000,000
Buckwheat	6,969,838	Total agricultural products—1849-50	*$1,299,383,932
Peas and beans	5,762,436	To which add for increase since 1850, and for the greater value of agricultural products, would give total for 1854	1,600,000,000
Market-garden products	5,280,030		
Cheese	5,276,736		
Hemp	5,247,430		
Rice	4,000,000		
Barley	3,615,910		
Molasses	2,540,179		
Beeswax and honey	2,378,606		
Clover-seed	2,344,890		
Maple sugar	1,712,871		
Hops	1,225,960		
Flax-seed	843,468		
Grass-seeds, (other than clover,)	833,662		
Flax	770 967		
Wine	442,498		
Silk cocoons	5,421		

The next shows the comparative population, and the comparative amount of certain specified crops. It is numbered 192, and is entitled,

RATIO PER CENT OF POPULATION AND CERTAIN PRODUCTS IN THE STATES TO THE TOTAL OF THE UNITED STATES.

States and Territories.	Population.	Wheat.	Indian corn.	Rice.	Tobacco.	Cotton.	Wool.	Hemp.	Sugar.
Alabama	3.33	.29	4.86	1.07	.08	23.08	1.25	.....	.04
Arkansas	.91	.20	1.50	.03	.11	2.67	.35	.04	.....
California	.4	.02	.....	.....	.....	.....	.01	.....	.....
Columbia, District of	.22	.03	.01	.....	.....	.....	.....	.....	.....
Connecticut	1.6	.04	.33	.....	.63	.....	.95	.....	.....
Delaware	.39	.48	.53	.....	.....	.....	.11	.....	.....
Florida	.38	.....	.34	.5	.5	1.85	.4	.....	1.16
Georgia	3.48	1.06	5.06	18.09	.51	39.41	1.88	.....	.36
Illinois	3.07	2.87	2.73	.....	.42	.....	4.10	.....	.....
Indiana	4.26	6.18	8.95	.....	.52	.....	4.97	.....	.....
Iowa	.83	1.52	1.46	.....	.....	.....	.71	.....	.....
Kentucky	4.24	2.13	9.91	.....	27.78	.03	4.37	51.01	.....
Louisiana	2.23	.....	1.73	2.05	.01	7.31	.21	.....	95.31
Maine	2.51	.29	.8	.....	.....	.....	2.6	.....	.....
Maryland	2.9	4.47	1.89	.....	10.73	.....	.91	.18	.....
Massachusetts	4.29	.03	.40	.....	.07	.....	1.11	.....	.....
Michigan	1.71	4.90	.95	.....	.....	.....	3.91	.....	.....
Mississippi	2.99	0.14	3.79	1.36	.02	19.80	1.07	.02	.....
Missouri	2.94	2.97	6.12	.....	8.57	.....	3.10	45.96	.....
New-Hampshire	1.37	.18	.27	.....	.....	.....	2.11	.....	.....
New-Jersey	2.11	1.60	1.48	.....	.....	.....	.71	.....	.....
New-York	13.36	13.66	8.02	.....	.04	.....	19.18	.01	.....
North-Carolina	3.75	2.12	4.72	2.54	6.0	2.07	1.85	.11	.....
Ohio	8.54	14.42	9.97	.....	5.26	.....	19.41	.43	.....
Pennsylvania	9.97	15.29	3.35	.....	.46	.....	8.53	.18	.....
Rhode-Island	.64	.....	.09	.....	.....	.....	.25	.....	.....
South-Carolina	2.88	1.06	2.75	74.28	.04	12.30	.98	.....	.08
Tennessee	4.33	1.61	8.53	.12	10.09	7.95	2.60	1.7	.....
Texas	.92	0.04	1.02	9.04	.06	2.87	.25	.....	3.1
Vermont	1.35	.53	.34	.....	.....	.....	6.47	.....	.....
Virginia	6.13	11.96	5.95	.....	28.44	.16	5.45	†.4	.....
Wisconsin	1.33	4.26	.34	.....	.....	.....	.43	.....	.....
Minnesota, New-Mexico, Oregon, Utah	.03 .27 .06 .05	.19 .21 .10	.06	.....	.....	.....	.06 .05 .02	.....	.....

* Professor Tucker estimated the crop of 1840 at $654,237,597. It was no doubt nearer $800,000,000.
† Crop underrated. In 1860, Virginia reports gave 3450 tons dew-rotted hemp and 1149 tons water-rotted.

We add another, which is numbered 193, and shows the

ACTUAL CROPS PER ACRE ON THE AVERAGE AS RETURNED BY THE MARSHALS FOR 1840–50.

States.	Wheat, bushels.	Rye, bush.	Indian corn, bushels.	Oats, bush.	Rice, lbs.,	Tobacco, lbs.	Seed cotton, lbs.	Peas and beans, bush.	Irish potatoes, bush.	Sweet potatoes, bush.	Barley, bush.	Buckwheat, bushels.	Hay, tons.	Hops, lbs.	Hemp, dew-rotted.	Cane-sugar, lbs.
Alabama,	5	....	15	12	.....	.....	525	12	60	200	.....	.....	.....	.....	.....	.....
Arkansas,	10	....	22	18	.....	.....	700	....	.....	100	.....	.....	.....	.....	.....	.....
Connecticut,	.....	....	40	21	.....	.....	.....	....	85	.....	.....	20	.....	.....	.....	.....
Delaware,	11	....	20	20	.....	.....	.....	....	.....	.....	.....	10	.....	.....	.....	.....
Florida,	15	.....	.....	.....	1,850	.....	250	....	175	.....	.....	.....	.....	.....	.....	750
Georgia,	5	7	16	18	.....	.....	500	5	135	400	.....	.....	.....	.....	.....	.....
Illinois,	11	14	33	29	.....	.....	.....	....	115	.....	40	15	1½	.....	.....	.....
Indiana,	12	16	33	30	.....	.....	.....	....	100	.....	25	25	1	.....	.....	.....
Iowa,	14	....	33	36	.....	.....	.....	....	100	.....	.....	.....	.....	.....	.....	.....
Kentucky,	8	11	24	18	.....	575	.....	....	130	65	.....	.....	1½	.....	650	.....
Louisiana,	.....	.....	16	.....	1,400	.....	550	....	.....	175	.....	.....	.....	.....	.....	1,000
Maine,	10	11	27	29	.....	.....	.....	....	120	.....	20	.....	⅞	.....	.....	.....
Maryland,	13	18	23	21	.....	650	.....	....	75	.....	.....	1	.....	.....	.....	.....
Massachusetts,	16	13	31	26	.....	.....	.....	....	170	.....	21	1	.....	.....	.....	.....
Michigan,	10	....	32	25	.....	.....	.....	....	140	.....	.....	14	.....	.....	.....	.....
Mississippi,	9	....	18	12	.....	.....	650	12	105	.....	.....	.....	.....	.....	.....	.....
Missouri,	11	....	34	26	.....	775	.....	....	110	.....	.....	.....	1¼	.....	775	.....
New-Hampshire,	11	14	30	30	.....	.....	.....	....	220	.....	22	.....	1	.....	.....	.....
New-Jersey,	11	8	33	26	.....	.....	.....	....	75	.....	18	16	.....	.....	.....	.....
New-York,	12	17	27	25	.....	.....	.....	....	100	.....	25	22	1½	950	.....	.....
North-Carolina,	7	15	17	10	.....	.....	.....	....	65	.....	.....	.....	.....	.....	.....	.....
Ohio,	12	25	36	21	.....	730	.....	....	75	.....	30	20	1½	.....	.....	.....
Pennsylvania,	15	14	20	22	.....	.....	.....	....	75	.....	.....	.....	1¼	.....	.....	.....
Rhode-Island,	.....	16	.....	32	.....	.....	.....	....	100	.....	18	.....	.....	.....	.....	.....
South-Carolina,	8	....	11	12	1,750	.....	320	18	70	.....	.....	.....	.....	.....	.....	.....
Tennessee,	7	7	21	19	.....	750	300	....	120	.....	.....	.....	.....	.....	.....	.....
Texas,	15	.....	20	.....	.....	.....	750	....	250	45	.....	.....	.....	.....	.....	.....
Vermont,	13	20	33	26	.....	.....	.....	20	178	.....	.....	25	1	.....	.....	.....
Virginia,	7	5	18	18	.....	660	.....	....	75	.....	.....	7	1	.....	.....	.....
Wisconsin,	14	....	30	33	.....	.....	.....	....	135	.....	18	.....	.....	.....	.....	.....

Table 194, which is at least curious, if not useful, entitled,

NUMBER OF COTTON, SUGAR, RICE, TOBACCO, AND HEMP PLANTATIONS.

States.	Number of cotton plantations raising 5 bales and over.	Number of sugar-planters.	Number of rice plantations each raising 20,000 lbs. and over.	No. of tobacco plantations each raising 3000 lbs. and over.	Number of hemp-planters.	States.	Number of cotton plantations raising 5 bales and over.	Number of sugar-planters.	Number of rice plantations each raising 20,000 lbs. and over.	No. of tobacco plantations each raising 3000 lbs. and over.	Number of hemp-planters.
Alabama,	16,100	.....	.....	.....	.....	Missouri,	.....	.....	.....	.....	4,807
Arkansas,	2,175	.....	.....	.....	.....	North-Carolina,	2,827	.....	25	.....	.....
Florida,	900	958	.....	.....	.....	South-Carolina,	11,452	.....	446	.....	.....
Georgia,	14,578	.....	80	.....	.....	Tennessee,	4,043	.....	.....	2,215	.....
Kentucky,	21	.....	.....	5,987	3,520	Texas,	2,262	165	.....	.....	.....
Louisiana,	4,205	1,558	.....	.....	.....	Virginia,	198	.....	.....	5,817	.....
Maryland,	.....	.....	.....	1,736	.....						
Mississippi,	15,110	.....	.....	.....	.....	Total,	74,031	2,681	551	15,745	8,327

There are in the Southern States 74,031 cotton plantations, including all producers of more than five bales; 2681 sugar-planters, including the smallest; 551 estates making more than 20,000 pounds of rough rice each; 15,745 tobacco estates of 3000 pounds each and over in Kentucky, Tennessee, and Virginia; 8327 hemp-planters in Kentucky and Missouri. Only such States are taken as are considered crop States.

The tables numbered 195, 196, and 197, relating to manufactures and mechanic arts, are also presented below. These tables have undergone a few revisions since their first preparation, and are proper to be placed in the present volume. There are 121,855 establishments of every description reported, producing each of any kind of manufactured article the amount annually of five hundred dollars. The capital invested in real and personal

estate is $527,209,193; the value of raw material used, including fuel, $554,655,038; the amount paid for labor, $229,736,377, and the gross annual value produced, $1,013,336,463, making 43 per cent profit upon the whole investment. The ratio of profits in the several States is also given, presenting some anomalies which can not at present be reconciled. Those who will examine the manufacturing returns of 1840 and 1820, will find still greater ones. The figures giving the number of hands employed, and the value of the annual product, are no doubt entirely correct, the chances of error being mainly in the returns of the cost of raw material, and the amount of capital invested. An average profit of 43 per cent would not be too high for the whole industrial operations of the country. The number of hands employed of all ages was 719,479 males and 225,512 females; total, 944,991. The county tables of this volume will show the amount of capital invested, the hands employed, and the total product of every county in the United States. The motive power, as steam, horse, water, etc., was ascertained for each establishment requiring such, but has not been prepared in tabular form. As the examination of the industrial schedules progresses, it is probable many of the figures in the tables will be modified and corrected.

TABLE CXCV.—PRODUCT OF MANUFACTURES, MINING, AND THE MECHANIC ARTS, 1850.

States and Territories.	Individuals and establishment.	Capital.	Raw material used.	Hands empl'd.		Annual wages.	Annual product.*	Per cent profit.
				Male.	Fem.			
Alabama	1,026	$3,450,606	$2,224,960	4,899	539	$1,106,112	$4,528,878	34.71
Arkansas	272	334,065	268,564	873	30	169,356	607,436	52.31
California	1,003	1,006,197	1,301,154	3,964	.....	3,485,820	12,862,522	812.52
Columbia, District of	395	888,965	1,339,146	1,678	498	616,152	2,493,008	60.49
Connecticut	3,482	23,890,348	23,589,397	31,287	16,483	11,685,236	45,110,102	41.13
Delaware	531	2,978,945	2,894,607	3,257	651	936,924	4,649,296	28.46
Florida	103	547,060	220,611	876	115	199,452	668,335	45.38
Georgia	1,527	5,460,483	3,404,917	6,660	1,718	1,712,304	7,086,525	36.06
Illinois	3,164	6,383,387	8,915,173	11,632	433	3,286,249	17,236,073	78.85
Indiana	4,288	7,941,602	10,314,337	13,677	665	2,809,116	18,922,651	74.23
Iowa	522	1,292,875	2,356,881	1,687	20	473,016	3,551,783	55.83
Kentucky	3,609	12,350,734	12,170,225	22,445	1,940	4,764,096	24,588,483	61.97
Louisiana	1,017	5,318,074	2,958,988	5,581	856	2,086,212	7,320,948	43.79
Maine	3,977	14,700,452	13,555,806	21,856	6,222	7,502,916	24,664,135	24.53
Maryland	3,708	14,753,143	17,326,734	22,641	7,483	7,374,672	32,477,702	52.71
Massachusetts	8,259	83,357,642	85,856,771	96,261	69,677	39,784,116	151,137,145	80.59
Michigan	1,963	6,534,250	6,105,561	8,930	360	2,387,928	10,976,894	38.01
Mississippi	877	1,833,420	1,290,271	3,065	108	775,128	2,972,032	49.45
Missouri	3,029	9,079,695	12,446,738	15,977	873	3,184,764	23,749,265	89.41
New-Hampshire	3,211	18,242,114	12,745,466	14,103	12,989	6,123,876	23,164,503	23.55
New-Jersey	4,108	22,184,730	21,992,186	28,549	8,762	9,202,788	39,713,586	38.40
New-York	23,553	99,904,405	134,655,674	147,737	51,612	49,131,000	237,597,2-9	53.86
North-Carolina	2,004	7,252,235	4,805,463	10,693	1,751	1,796,748	9,111,245	34.60
Ohio	10,622	29,019,538	34,677,937	47,054	4,435	13,467,660	62,647,259	49.97
Pennsylvania	21,605	94,473,810	87,206,377	124,688	22,078	37,163,232	155,044,910	32.47
Rhode-Island	853	12,923,176	13,183,889	12,837	8,044	5,008,656	22,093,358	30.18
South-Carolina	1,431	6,056,865	2,809,534	5,935	1,074	1,128,432	7,063,513	51.60
Tennessee	2,861	6,975,279	4,900,952	11,154	878	2,277,228	9,728,436	36.56
Texas	309	539,200	394,642	1,042	24	322,368	1,165,538	83.17
Vermont	1,849	5,001,377	4,172,552	6,894	1,551	2,202,348	8,570,920	43.91
Virginia	4,741	18,109,993	18,103,433	25,789	3,320	5,413,764	29,705,387	34.17
Wisconsin	1,262	3,382,148	5,414,931	5,798	291	1,712,496	9,293,068	64.00
Territ'y Minnesota	5	94,000	24,000	63	.....	21,420	57,500	12.85
Territ'y New-Mexico	23	68,300	110,220	81	.....	20,772	249,010	172.79
Territ'y Oregon	52	843,600	809,560	285	32	388,620	2,236,640	123.10
Territ'y Utah	14	44,400	337,381	51	.....	5,400	291,220	†
Total	121,855	527,209,193	554,655,038	719,479	225,512	229,736,377	1,013,336,463	43.43
New-England States	21,631	158,115,109	153,103,881	183,238	114,966	73,317,148	274,740,063	31.19
Middle "	53,900	235,183,908	265,334,722	228,530	91,084	104,424,768	471,975,751	43.44
Southern "	10,406	37,426,626	29,343,958	49,953	7,978	10,250,700	53,635,005	37.51
South-west "	6,362	18,440,734	12,078,377	26,114	2,435	6,736,404	26,323,276	40.93
North-west "	29,556	78,042,726	94,784,098	131,644	9,049	36,007,357	186,662,368	71.59
Non-slaveh'd'g "	93,815	431,290,351	467,125,253	577,434	203,654	195,872,665	845,430,428	51.57
Slaveholding "	28,040	95,918,842	87,529,785	142,045	21,858	33,863,712	167,906,035	48.49

* Exclusive of those in families. † A loss of 116.13 per cent.

TABLE CXCVI.—COTTON MANUFACTURES, 1850.*

States, etc.	Establishments.	Capital.	Raw material used.			Hands empl'd.		Average wages per month.		Prod'ts.†
			Bales of cotton.	Tons of coal.	Value of raw material.	Male.	Fem.	Male.	Fem.	
Alabama	12	$651,900	5,208	.....	$237,081	346	369	$11 71	$7 98	$382,360
Arkansas	3	16,500	170	.....	8,975	13	18	14 61	5 88	16,637
Columbia, Dist. of	1	85,000	969	.....	67,000	41	103	14 02	8 00	100,000
Connecticut	128	4,219,100	39,483	2,866	2,500,062	2,708	3,478	19 08	11 80	4,257,522
Delaware	12	460,100	4,730	1,920	312,068	413	425	15 31	11 58	538,439
Florida	.....	80,000	600	.....	30,000	28	67	32 14	5 00	49,920
Georgia	35	1,736,156	20,230	1,000	990,419	873	1,399	14 57	7 39	2,135,044
Indiana	2	43,000	675	300	28,220	38	57	13 02	6 77	44,200
Kentucky	8	239,000	3,760	720	180,907	181	221	14 95	9 36	273,439
Maine	13	3,329,700	31,531	2,921	1,573,110	780	2,959	29 35	12 15	2,930,356
Maryland	24	2,236,000	23,325	2,212	1,165,579	1,008	2,014	15 43	9 48	2,130,504
Massachusetts	213	28,455,630	223,607	46,545	11,289,309	9,293	19,437	22 90	13 60	19,712,461
Mississippi	2	38,000	430	.....	21,500	19	17	14 21	5 94	30,500
Missouri	2	102,000	2,160	1,658	86,446	75	80	10 93	10 00	142,900
New-Hampshire	44	10,950,500	83,026	7,679	4,839,429	2,911	9,211	26 09	13 47	8,830,619
New-Jersey	21	1,483,500	14,437	4,467	666,645	616	1,096	17 98	9 56	1,109,524
New-York	86	4,176,920	37,778	1,539	1,985,973	2,632	3,688	18 32	9 68	3,891,989
North-Carolina	28	1,058,800	13,617	.....	531,903	442	1,177	11 65	6 13	831,343
Ohio	8	297,000	4,270	2,152	237,060	132	269	16 50	9 42	394,700
Pennsylvania	208	4,528,925	44,162	24,189	3,152,530	3,564	4,099	17 85	9 91	5,322,362
Rhode-Island	158	6,675,000	50,713	13,116	3,484,579	4,959	5,916	18 60	12 95	6,447,120
South-Carolina	18	857,200	9,929	.....	285,971	309	620	13 94	8 20	748,538
Tennessee	33	669,600	6,411	3,010	297,500	310	681	10 94	6 42	510,624
Vermont	9	202,500	2,243	.....	114,415	94	147	15 53	12 65	196,100
Virginia	27	1,908,900	17,785	4,805	828,375	1,275	1,688	10 18	6 98	1,486,384
Total	1,094	74,500,931	641,240	121,099	34,835,056	33,150	59,136	.....	.....	61,869,184

TABLE CXCVII.—WOOLLEN MANUFACTURES, 1850.

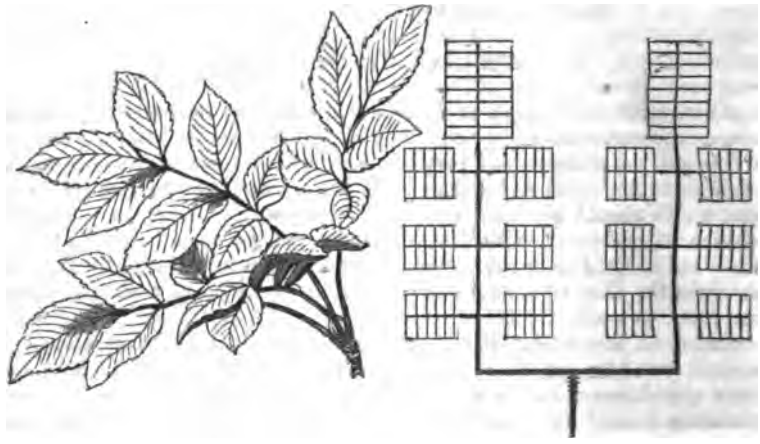
States, etc.	Establishments.	Capital.	Raw material used.			Hands empl'd.		Average wages per month.		Prod'ts.‡
			Pounds of wool.	Tons of coal.	Value of raw material.	Male.	Fem.	Male.	Fem.	
Columbia, Dist. of	1	$700	5,000	.....	$1,630	2	.....	$30 00	.....	$2,400
Connecticut	149	3,773,950	9,414,100	7,912	3,325,709	2,907	2,581	24 12	12 86	6,465,216
Delaware	8	148,500	393,000	45	204,172	122	18	18 79	17 33	251,000
Georgia	3	68,000	153,816	.....	30,392	40	38	27 47	14 10	88,750
Illinois	16	154,500	396,964	987	115,367	124	54	22 00	12 52	206,572
Indiana	33	171,545	413,350	90	120,486	189	57	21 81	11 05	205,802
Iowa	1	10,000	14,500	.....	3,500	7	.....	11 14	.....	13,000
Kentucky	25	249,820	673,900	.....	205,287	256	62	15 30	11 11	318,819
Maine	36	467,600	1,438,434	.....	495,940	310	314	22 57	11 77	753,309
Maryland	38	244,000	430,300	100	165,568	262	100	18 60	11 89	295,140
Massachusetts	119	9,089,342	22,229,932	15,400	8,671,671	6,167	4,963	23 95	14 22	12,760,565
Michigan	15	94,000	162,250	.....	43,462	78	51	21 65	11 47	90,242
Missouri	1	20,000	80,000	1,071	16,000	15	10	32 00	6 50	56,000
New-Hampshire	61	2,437,700	3,604,103	3,600	1,267,329	926	1,201	22 86	14 53	2,127,745
New-Jersey	41	494,274	1,510,289	1,889	548,367	411	487	25 32	8 60	1,184,446
New-York	249	4,459,370	12,538,786	.....	3,898,293	4,262	2,412	19 97	11 76	7,020,694
North-Carolina	1	18,000	30,000	.....	13,940	15	15	18 00	7 00	23,750
Ohio	130	870,220	1,657,726	2,110	578,423	903	298	20 14	10 90	1,111,027
Pennsylvania	380	3,005,064	7,560,379	10,777	3,282,718	3,490	2,236	19 23	10 41	5,321,866
Rhode-Island	45	1,013,000	4,103,370	2,032	1,463,900	987	771	20 70	15 18	2,381,225
Tennessee	4	10,900	6,200	.....	1,675	15	2	17 66	6 00	6,310
Texas	1	8,000	20,000	.....	10,000	4	4	20 00	20 00	15,000
Vermont	72	886,300	2,328,100	.....	830,684	683	710	24 46	11 81	1,579,161
Virginia	121	392,640	1,554,110	357	488,899	478	190	18 17	9 91	841,013
Wisconsin	9	31,235	134,200	.....	32,630	25	.....	22 48	.....	87,992
Total	1,559	28,118,650	70,862,829	46,370	25,755,991	22,678	26,574	.....	.....	43,207,545

* In these tables, the States which report no product will be omitted.
† 763,678,407 yards sheeting, etc., were produced, and nearly 30,000,000 lbs. yarn and batting.
‡ 88,206,653 yards cloth were manufactured, 4,294,336 lbs. of yarn, beside blankets and hats.

ARCHITECTURE.

ARCHITECTURE is a great science. It is not great in the sense in which the science of mathematics is great, but in its influence on the comfort, the condition, and the character of a people. This influence extends through all the relations of life, social and political. It has a moral and religious bearing, also, which should not be overlooked. If we would properly estimate the relative importance of this subject, we must give it a careful study. But to know and to feel that it is great, requires but a moment's thought. Note, for example, the effect of a huge cathedral upon the mind of a traveller unaccustomed to such structures. The narrative of every foreign tourist bears testimony on this point. Nor is the influence felt by the stranger alone. It is novel with him, but it is real with all. Send the thousands who daily visit those grand structures for devotional purposes, to some diminutive country "meeting-house," and what a change would come over them! Then, *they* too would appreciate something of the extent of this mighty power. But we need not go to ecclesiastical structures for witnesses. Who has not felt the social influence of a *bow-window*, with its drapery, behind which two or more may retreat and enjoy a more exclusive style of entertainment than is afforded in the thronged drawing-room? We are not here descending to trifles, and venture another example, of kindred nature. The good old-fashioned fireplace, with its cheerful blaze, now alas! is expelled from many a homestead in these Northern States, and its place supplied (oh! how miserably!) by a furnace in the cellar. What a vacancy is here produced! The charms of "the fireside"—the almost sacred sympathies of the "social hearth"—all these household gods are taken from us, and not even the semblance of a substitute is provided. Instead of collecting around the cheerful fire, the members of the family disperse, like a scattered fold, to such retreats as promise the best protection. Each contrives to find some object by which to fix himself, very much with the same feeling as one searches for a hook on which to secure a horse who may otherwise, through mere discontent or impatience, wander he knows not where. But it is not our purpose, just now, to follow along this path, as other thoughts have prior claims upon us.

The forms of the objects we constantly gaze upon act very powerfully upon our æsthetic natures. That some powerfully excite our sympathies, is obvious. Who has not looked for the thousandth time, and with at least undiminished delight, upon some lofty tower or tall church-spire? But no one will take the trouble to turn his head toward a low, rectangular, barn-like structure. Set a whole school to drawing figures upon their slates, for amusement, and how many will construct a mere rectangular figure? Not one. All select more complex forms, or more varied, or at least more tasteful outlines. And this is not accident, nor education, nor proof of skill, nor of the want of it. It is nature. Nowhere in all her dominions, does she exhibit special regard for such shapes. With the exception of a very limited number of crystallized salts, no such forms are to be found in all her realm. In the animal and vegetable world there is no such example. Imagine the leaves of trees to be of this shape, and how utterly is the beauty of the landscape annihilated, and with it all its kindly influence! Look at these diagrams, which we copy from Ruskin, used by him for illustrating a kindred thought, and note the contrast between the two forms, and we shall not probably be charged with extravagance in what we have written:



But does our shrubbery affect us more powerfully than do our homes? Do fields and meadows exercise greater influence over us than our parlors, our bed-chambers, our nurseries, and our school-rooms? These scenes are constantly before us, are ever present with us, and are ever exerting an influence upon us, to add to or take from our comfort. Who ever doubted the effect of familiarity with good paintings, in forming our tastes? Even the character and styles of our chimney ornaments are not without effect, particularly upon those whose tastes and preferences are yet "unformed."

The effect of personal deformities is readily appreciated. The presence of such is, in itself, always offensive. But in the sum total, these effects are comparatively unimportant, for two reasons. Deformed persons are comparatively rare, and therefore produce little pain, on the whole. Beside, they often charm us by their remarkable qualities of head or of heart, and we believe this to be, not the exception, but the rule. This is one of those cases of compensation so common in the administration of a kind Providence. But there is no such compensation in a deformed dwelling, a graceless structure. This is vice unqualified, plainly obvious, ever before us, and if so familiar as not positively to offend, it is because our own tastes are so debased that they harmonize with those deformities. We have often been reminded of these ideas, by seeing the crowds gathered round the windows of our picture-shops. They have excited a greater interest in us than have the pictures themselves. We have thought that it argued well for the uneducated classes, that they were alive to such an influence. But we are disposed to vary the expression, and to prove from this fact that our very nature is so constructed as to be powerfully affected by such exhibitions. This is a quality which does not belong to the educated, nor the matured, not to the simple nor the unlearned, alone, but to all, of all ages and of all conditions. This fact is too important to be overlooked.

But there are certain anomalies existing in many communities, which can not be explained without careful investigation. For example:

New-England is, in some respects, the glory of this country. It abounds in thriving villages, built up by means of successful application to the arts. Mechanical skill and industry have produced these results. But go through many of these villages—the very rewards of skill in art, the medals with which industry honors her votaries—and in every house you see but a mag-

nified box, or case for merchandise, clap-boarded and painted, having a top slightly inclined so as to shed water. The interior is as destitute of good taste as the exterior. The straight walls, rectangular in every feature, are pierced with numerous rectangular openings for windows, with rectangular frames and rectangular doors, both of which are usually in bad taste, in form, number, size, and position.

Our second diagram is a perfect type of the villages. The staring white surface of the walls of the houses is only broken by *very green* window-blinds. Why all this is so, as already suggested, is not to be explained, without thought, in one short sentence. If it was economy, or poverty, which induced it, we should have something to offer in mitigation of the wrong. But economy and good taste may harmonize, and often do, in much less pretending structures.

Lest some one should be disposed to ridicule this matter, as of only trifling concern, let us test the truth of our claim by another reference to the natural world. Suppose all our bold mountains were carefully moulded into uniform blocks of rectangular shape—or all were reduced to a level plain; all our water-falls were annihilated, and our running brooks mere rectangular collections of still, lifeless water—what a change would be produced! How many odes and sonnets, and bucolics and pastorals would be written? How would a square moon strike your fancy? But the Author of creation knew better than to fashion such a world. True there are extensive plains, and wide regions of country, where all is reduced, essentially, to the condition described. And what sort of intellects are reared there? Who, under such circumstances, has exhibited a gigantic mind, or a fervid imagination? Who has there erected beautiful fancies, or breathed sweet sonnets? Even the ballad germinates best in Scottish highlands. The lands most eminent for the beautiful in literature, are the lands famous for their structures and their natural scenery. The one or the other may be regarded as cause or effect; they are, in fact, coëxistent.

We verily believe that if our school-rooms were constructed and furnished after the model of a tasteful parlor, the change would exert a most happy influence upon the mind, the taste, and the manners of the young, and would go further in improving the face of society, than do the ferrule and the rod, and all our systems of police. Some progress has been made in this respect, and not without great gain. What better than the manners of the stable can be reasonably expected from a school-room no better than a stable?

We therefore invite attention to this subject in all its branches and departments. It is not the school-boy only who is under such influences. We all are subject to them. He is in an unhappy condition who can not feel their power. We invite discussions on this topic, and will furnish the necessary illustrations. We purpose to do what we can, with propriety, as opportunity will permit.

NORTH-CAROLINA AGRICULTURAL SOCIETY.

Among the many excellent addresses at our Annual Fairs the present season, we have seen few that were so full of valuable thoughts as one delivered before this Society, by Hon. Kenneth Raynor. It was their second anniversary. We are happy to find place for the following extracts:

"When we reflect that the object of our association is to enlarge the field of operation for labor, to secure to labor the rewards of its toil, to stimulate it to still greater exertions, and enable it to accomplish the greatest results of economizing its powers, it is evident that the effect must be to dignify, honor, and elevate labor. It is the laborer, especially, that we invite and welcome to our brotherhood. In our own country, above all others, it must be destined soonest to reach its proper position. Our institutionsr ecognize no distinctions in industrial pursuits. The road to honor, to wealth, to power is open to all alike. The framers of our institutions were true to the teachings of a past history. Not only the soldiers who fought our revolutionary battles, but many of their heroic leaders were laboring men, artisans, and mechanics. Washington was a land-surveyor, Greene was a blacksmith, Wayne was a laboring farmer, Morgan was a wagon-driver. Our government, then, in its organic structure, has done for labor all it could. It is for voluntary association, then, to elevate labor in the social scale.

I am pandering to no spirit of political socialism when I say, that I have long thought society needed a radical reformation in regard to the estimate placed on labor. Why should the laboring man be excluded from the saloons of fashion, the hospitable board of the wealthy, the companionship of the great? I mean merely *because* he is a laboring man?

Why is it that the young man who returns home from college with an education secured by the economical savings of an industrious father, thinks it beneath his dignity to assist that father in the routine of his domestic occupations? Or the young lady, whose "accomplishments" have been paid for by the self-denial of an indulgent mother, thinks it a reproach to aid that mother in the discharge of the duties of a diligent housewife? It is because public opinion is all wrong in associating labor with degradation. Why is this? Labor is the first great law of nature. Nature herself is a great workshop where change, renovation, and development are constantly going on.

* * * I wish not to be misunderstood. It is not to be expected or desired that intellect shall fraternize with ignorance, or virtue with vice. A natural incongruity forbids such association. Public opinion needs no reformation in this respect. But the reformation which is needed, and which we are led to hope, is silently working its way, is this—that the pursuits of honest labor shall no longer be a bar to the highest social position; and a stimulus thus given to the laboring man for the cultivation of his intellect, and development of the common good, of mental resources that might otherwise remain dormant; and by holding out to him the rewards of virtue, the paths of vice and dissipation may be shunned. These annual festivals of agricultural and mechanical industry are working a powerful though imperceptible moral influence in this respect. For the time being, they break down all the artificial barriers with which man has hedged in his lordly self. Our honors and rewards are to the most worthy. *Honor digniori* should be our motto. We have no use for drones in our hive. Industry and labor are the elements of our success. If we are to effect any thing for the good of our country, or the welfare of our fellow-men, it must be through the agency of these great sources of human good. * * *

I might insist on the necessity of manure, as a means of restoring and improving the soil; and on this point, I presume I should have less misgiving and prejudice to encounter, than on any other. This was, no doubt, the first movement ever made in agricultural science; and for thousands of years, continued to be the only one. The luxuriant vegetation following the accidental incorporation of manure with the soil, suggested itself to the senses

without the process of rational deduction. The importance of manure, as necessary to vigor of growth, and a sure return in fruit-time, comes down to us sanctified by the moral teaching of the parable. The life of the barren fig-tree was besought and spared for one year, till man should do his duty, in applying to it the elements of fertility. The present condition of England, where in the last hundred years, the average of the wheat crop has been increased from an average of 12 to one of 24 bushels per acre, and, in many districts, to 50 or 60 bushels—of Massachusetts, when a soil, naturally barren and rugged, has been so subdued and improved as to support one of the most wealthy and powerful communities on the earth—afford a more eloquent and convincing argument in favor of carefully preserving and restoring to the soil the elements of manure, than language can utter or pen can write. As to the best means of preparing it and method of applying it—that belongs rather to the laboratory of the chemist, than the rostrum of the orator.

I might dilate on the importance of lime, which both theory and experience have established to be the great basis of all permanent agricultural improvements: but why attempt this, when the immortal work of Ruffin, one of the great public benefactors of his time, on the calcareous manures has in a plain and practical style unfolded, not only treasures of knowledge, but mines of wealth, the existence of which were not dreamed of a few years since.

And so in regard to the entire catalogue of all branches of agricultural knowledge; if I were to presume to give instruction, I should fall far short of what may be obtained in any good agricultural journal, or the countless works of standard authority, which are daily issuing from the press, in supply of the demand for agricultural knowledge.

It is not the difficulty of obtaining information, that is the bar to our progress. It is the difficulty of removing long cherished prejudice and ancient habit of appreciating the wonderful progress in industrial enterprise that is in operation in the world around us, of awaking to the importance of availing ourselves of the vast stores of knowledge that science and experience, are daily bringing to light; arousing a laudable ambition among our people to enlist as competitors in the great race of progressive improvement—these are all that is necessary to make our State one of the most prosperous, wealthy, and happy communities on earth."

HOW RAILROADS INCREASE WEALTH.

In addition as at the present time there exists quite an outcry against some of the railroad enterprises of the day, we copy the following from a late number of the Cincinnati *Railroad Record*, with the object of showing the influence of railways, and the increase of capital and the facilities of commerce:

Railway investments in Ohio, - - - -	$50,000,000
Market value, - - - - - - - -	35,000,000
Increased value of lands, - - - - -	51,000,000
Annual gain in transportation $7,000,000, which is interest on. - - - - - - -	
Annual gain in interest $1,000'000, which is interest	100,000,000
on, - - - - - - -	15,000,000
Aggregate value, - - - - -	$201,000,000

Deduct the original cost, and we have a clear gain of capital to the extent of 151 millions of dollars. Mr. Mansfield, the editor, thus comments:

"Try this estimate by any other test that can be applied, and it will be found to be within limits. Take, for example, the valuation of the State. In three years three hundred millions have been added to the assessments of the State, and the assessments are under valuation. Take Cincinnati as an example. In five years her commerce has doubled. What has done it? Her bank capital is constantly diminishing, and her rates of interest are enormous. What has sustained her? But for the extension of her trade through the interior, by railways, the tyranny of legislation and the equally bad municipal management would almost have crushed her. The vastly enlarged facilities for trade, and also of manufactures, have borne her triumphant through the conflict. Whence, then, originates the absurd idea, that railways have absorbed commercial capital? Railways alone have saved the commercial community from bankruptcy. Whence, then, comes this cry? This is it—Railways as well as increased currency have immensely increased the business of the country. Hence, more money is required for a greatly enlarged business. Then extravagance, to a most foolish extent, has taken possession of the wealthy classes, and that demands money. Then comes a pressure. There is overtrading, export of specie, high rates of interest, and some failures. Some body must be blamed. Who? The most prominent, active, and public body is a railway, and he is charged with doing too much. It is the old Jack Cade cry of put down the men with the ink-horns, because they can write; and arrest the progress of railways, because they make too much business! When you cease to make railways, the goose that laid the golden egg will be killed."

MEMPHIS: HER ENTERPRISE AND RAILWAYS.

At a public dinner given by all parties to Mr. Prentice, of the *Louisville Journal*, this talented editor, in his speech, made the following happy remarks on the subject of our title:

"In public spirit and enterprise, I regard Memphis as a model city. There is no city in the Union, there is no city in the world, that understands her own interests better, or that prosecutes them with more boldness, energy, and success. She has made heavy appropriations for railroads, and she has made them judiciously. I said that the future of parties is uncertain, but the future of Memphis is not. Let her continue to be true to herself, as she has been true, and a magnificent destiny is before her. She will be the equal of any city in all the West and South in population, in wealth, and in whatever constitutes a city's greatness and prosperity. Her Charleston railroad, her Grenada railroad, her Louisville railroad, and her Arkansas railroad, for all of which she has made liberal appropriations, will pour a greater abundance of wealth into her lap than if they were so many great navigable rivers, all laving her borders. Rivers in these days, except for purposes of heavy transportation, are getting to be little else than old fogies. In more senses than one, they are all going down hill. They have been running all their lives, but the railroad-cars can beat them out of sight, even at that game. As for our Ohio, generally known as the beautiful river, if it is not more useful hereafter than it has been for some time past, instead of asking an appro-

priation from Congress to clear it out, we may ask one to fill it up. It wouldn't take much. The fact is, the Ohio, just now, is not worth a fiftieth part as much as the ground under it would be if free of the fluid encumbrance. Your Mississippi has a big reputation, but when in coming last week from St. Louis to your city, our boat grounded repeatedly each day, and had to lie by each night for want of water, I began to suspect that the great father of rivers, though he sometimes swells prodigiously, isn't much better than some of his shallow children.

Talking, like travelling on the Ohio River, is rather dry work, gentlemen; but before I sit down I wish to say one word in especial reference to your projected Arkansas railroad. My mind was strongly directed to that project some months ago by my friend, Mr. Stickney, and having come to your city with the leading contractor for the work, my attention has of late been particularly called to it. In common with many of you, I listened with delighted interest, a few evenings ago, to the able and practical speech of that contractor. I feel, of course, the deepest interest in your connection with my own city, yet I can not but see that your contemplated road to Little Rock is to you the most important of all your noble railroad enterprises. Your city is the terminus of the Memphis & Charleston Railroad, the terminus of the Memphis & Grenada Railroad, and the terminus of the Memphis & Louisville Railroad. The Arkansas Railroad is the Western outlet and inlet of all these. At the St. Francis it becomes the depot of the whole region drained by that river. Forty-five miles further west it crosses White River, which, with its tributaries, drains a country equal in extent to Western and Middle-Tennessee. Extend it to Little Rock, and the whole of the immense valley of the Arkansas is at your door. Thus this road will attract to your city an amount of travel, trade, and population that will make your holders of real estate millionaires, your merchants merchant-princes, and all your men of business men of fortune. It will be to Memphis a source of greater wealth than if it were a stream running like the fabled Pactolus over sands of *gold*."

MECHANIC ARTS AT LOUISVILLE, KY.

THE annual address at the Mechanic Institute of this thriving city was delivered by Mr. Ben. Cassidy. Among many most excellent things uttered are the following. We commend them, as, indeed, the whole address, to universal notice.

"Louisville needs only to have publicity given to her advantages—needs only to employ the simple means which the experience of her sister cities has taught her—not only to attract to her thousands of emigrants from abroad and thousands of capitalists and adventurers from other parts of our own country, but also to place her present capacities as a manufacturing mart in the front rank among cities. These statements so little accord with the commonly-received opinion of our citizens that they may well create surprise. But the well-known story of yonder card of cow-bells will serve to illustrate the fact that none are so ignorant of our own productive capacity as we ourselves.

An order for a large number of these bells was received by one of our most prominent merchants from some friend in New-York, with the remark appended that the Louisville bells were the finest-toned and best-finished in the coun-

try, far exceeding any which could be found in the East. The merchant was inclined at first to regard the order as either a blunder or a hoax on the part of his correspondent, and for several days he laughed over it with his friends. And a considerable time elapsed before, by dint of industrious search, or, some assert, by accident, he was enabled at last to find the factory and hand over the order.

This little circumstance has alone given publicity in Louisville to a branch of manufacture which had long been known and was highly regarded in New-York.

Does there exist in the Union or in the world another city of which such a story can be told? Do you see the waters of yonder fountain, leaping and flashing in the light of the chandelier, and do you know that the exhibitors of that beautiful work and the adjacent iron-work are daily presenting the public with the largest variety and best-constructed architectural castings in the Western country, if not in the United States? Do you see yonder case of edge-tools, and do you know that your own workmen use them in preference to the manufactures of Sheffield? The beautiful enamel-work of those grates and of that vase—do you know that it is produced in and sold from Louisville?

Yonder profuse display of agricultural implements—are you aware that they proceed from a factory only surpassed in extent by one, and not surpassed in facilities or in completeness by any in the country; and that that factory is on Eighth street in this city? Yonder is a whole room devoted to the display of musical instruments, two thirds of which are of domestic manufacture. I might go on pointing out object after object in this room with similar commendation; and I might instance new branches of manufacture which have been put into operation since the closing of last year's fair: but I have said enough to show that it is not capacity in which Louisville wanting. It is policy, publicity, *puffery*, if you will.

A man may sit in a obscure alley offering pearls at two-pence a-piece, and yet find no purchaser; but if the same man were known to have pearls for sale at reasonable prices under the shade of a rock in the desert, caravans would be formed and companies would go to buy his wares. So it is with the manufacturer. His wares may be ever so good, his prices ever so reasonable, but unless he employs proper means of making them known to the public, he can not expect appreciation."

THIRD POMOLOGICAL CONGRESS.

The American Pomological Society has just been holding its third session in Boston. The Society was formed in Washington four years ago, and held its second session in Philadelphia in 1852. Its name denotes its general object, which is to foster the fruits of the earth, particularly those of the orchard and the garden. There were assembled delegates from twelve States of the Union, extending from Maine to Florida, and also one or two horticulturists from Old England. There were discussions upon the cultivation of the pear, and quite a number of pears upon our list were voted unfit for cultivation. A pear called the Lawrence pear, that originated a few years ago on Long-Island, was highly recommended. The varieties of apples, peaches, and plums also had their turn. The opening address was by Marshall P. Wilder, Pre-

sident of the Association, in which he spoke of the importance of our having varieties of fruit adapted to our soil and climate—on the arts of cultivation, the systems of pruning, and the preservation and ripening of fruit. A few of his words upon soils are below:

"The influence of soils is remarkable. But by those we do not mean the identical spot, the artificial bed in which the tree stands; for in time the roots take a wide range in search of food. Some fruits are good in nearly all places; others, only in their original locality. Some succeed best on light, loamy, or sandy soils; others in stiff, clayey. In the latter, many pears—for instance, the Beurre Bosc and Napoleon, are astringent, while in the former they are entirely free from this quality. The Beurre Ranee, in England, and in some parts of France, is the best late pear. So it is, also, in some parts of Belgium, while with others, and with us, it is generally inferior.

The flavor of fruit is much influenced, not only by soil but also by climate and meteorological agents. Thus, in a cold, wet, and undrained soil, disease commences in the root; and as a natural consequence, the juices of the tree are imperfectly elaborated, and unable to supply the exigency of the fruit. Even injurious substances are taken up. A plum-tree has been known to absorb oxide of iron, so as not only to color the foliage, but also to exude and form incrustations on the bark, and finally to kill the tree. As an instance of climatic agency, it is sufficient to report the fact that out of fifty varieties of American peaches grown in the gardens at Chiswick, England, only two were adapted to the climate."

In reference to pears on quince-stocks, or dwarf pear-trees, Mr. Barry, of New-York, the able editor of the *Horticulturist*, remarked as follows:

"He had seen it stated in several newspaper paragraphs, that the cultivation of the pear on quince-stocks had proved to be a failure. He regretted to have such statements sent abroad. They are not correct. He considered it a great blessing to the country, that pears could be cultivated on quince-stocks, because it enabled thousands upon thousands of our citizens to enjoy delicious varieties of fruit years earlier than they otherwise could. Perhaps the best way to check this erroneous impression would be for the Society to recommend a list of pears that succeed best on quince-stocks. He had prepared a brief list of sorts, and would submit it for the consideration of the meeting. All the pears enumerated were not, indeed, of the best quality, but they have been successfully proved on the quince. Before giving the list, he would say that the best quince-stocks were the Fontenay and another variety. The common apple or orange-quince of this country is not a suitable stock for budding. It may grow well for one or two years, but will ultimately fail.

Pears for cultivation on quince-stocks: Rostiezer, Beurre d'Anjou, Beurre Diel, Duchess d'Angouleme, White Doyenne, Louise Bonne de Jersey, Fig d'Alençon, Urbaniste, Easter Beurre, Glout Morceau, Pound, Catillac, Vicar of Winkfield, Napoleon, Beurre d'Amalis, Beurre d'Aremberg, Soldat Labourer, Beurre Laugeleir, Long Green of Cox, Nouveau Poiteau, and St. Michel Archange."

The list was adopted by the Society.

This national association of fruit-growers, coming together every other year, and comparing their experiences, and spreading them broadcast over the country, with no other object than the production of the best fruits, must have a most important effect, in a few years more, upon the pomology of the United States.

AGRICULTURAL EDUCATION IN OHIO.

We rejoice at any demonstration of an interest in agricultural science. Hence we are happy to extend the circulation of the following announcement found in one of our exchanges:

Ohio Agricultural College at Oberlin.—The first term of this College will commence on the first Monday of December, and continue three months. The object is to place within the reach of farmers, both old and young, the means of acquiring a thorough and practical acquaintance with *all* those branches of science which have direct relations to agriculture.

It is proposed to give courses of lectures during the winter months on all the several departments of agricultural science, each principal division being assigned to a different lecturer, and systematically presented in the same manner as medical science is taught in medical colleges. The branches taught will embrace whatever pertains to animals, vegetables, land, or labor.

LECTURES.

James Dascomb, M.D., Chemistry in all its appliances to Soils, Manures, Animal and Vegetable Life, and the Domestic Arts, etc. This department is regarded as especially important, and means have been provided for its thorough illustration.

Norton S. Townsend, M.D., Comparative Anatomy and Physiology, with special reference to the feeding and breeding of Stock; History and Description of Domestic Animals in their several varieties; Veterinary Medicine and Surgery; Entomology. This department will be illustrated by preparations and specimens, and by the practice before the class of such operations as are necessary to be performed by the keeper of stock.

John S. Newberry, M.D., Geology and Mineralogy; Botany, Descriptive and Physiological, with special reference to the history and habitudes of all plants cultivated in the Garden and Orchard, or in the Field—the various modes of culture, and soils adapted to each. This department will be illustrated by specimens of all the varieties of grains, fruits, and other vegetable products of interest to the Farmer, Gardener, or, Orchardist.

James H. Fairchild, A.M., Natural Philosophy, Agricultural Mechanics, Farm Implements, Meteorology, Elements of Engineering and Land Surveying, Rural Architecture, Landscape Gardening, and Farm Book-Keeping. Philosophical apparatus, implements, models, plans, drawings, etc., will be abundantly provided, to aid the lecturer in this department.

The lectures will commence on the first Monday in December, and continue three months.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

DROUGHT IN HAWKINS COUNTY, TENN.

Messrs. Editors: It is well known to every reader in the United States, that, in the South and West, crops of all staple commodities are shorter this season than they have been for many years. *Cause*, the drought. Corn, the leading cereal of the Union, it is supposed, is less by one third the quantity grown last year, in all the South and West. In East-Tennessee, also, it is the same. Wheat is neither so good or abundant as last year. The crops of oats are better. So of the hay-crop; and this is unaccountable; but the

hay, as a general thing, is better in quality and quantity than the crop of last year. The root-crop is poor. Potatoes, turnips, ruta-bagas, beets, etc., are all small and few. The drought continues up to this writing. The waters are all at the lowest known ebb, and grinding is quite an object even in this celebrated water-power country. Notwithstanding this, clover-pastures and the various grazing-grounds are yet well clad with a good coat of foilage, and our forests are rich with acorns, nuts, etc., all aiding the sad failure in crops. If there should be a mild winter, no inconvenience may be felt from the drought of the summer. Prices of grains are about twenty-five per cent higher now than at this time last year; pork about the same, the driving on foot, to markets in Virginia and the Carolinas, from this country, will not be so extensive as formerly; but it is believed that bacon this year will be more abundant, which may not, however, rule prices low, on account of transportation; indeed, in justice, this year the farmer should have a better price for his products, to correspond to the high prices he has to pay for all his necessaries and luxuries on sale in the stores of East-Tennessee. These, it is presumed, have advanced fully one fourth, or twenty-five per cent, since last year. Our good old county of Hawkins, honoring the cognomen of one of the Senators, Commissioners of our own State from North-Carolina, I would say, cultivated about twenty thousand acres of land, from which her farmers sell in surplus of the foregoing-named articles, about five dollars per acre annually; the prime quantity, however, is enjoyed by her hardy, healthy population, in raising stock, etc., and a proportion in raising up for the country the most reliable generation of girls and boys in all the Union. They will be found so, in peace and in war; in peace, hospitable, kind, generous, and social; in war, chivalric and daring. The county covers about three hundred and fifty square miles of good arable land, scarcely any of it less susceptible of cultivation than the cultivated portions of New-England. Lately, vast mines of copper, zinc, lead, etc., have been discovered imbedded in her bosom. Hawkins County could support and employ profitably, and make wealthy, ten times the population she has. "*Qui primus venerit, primas tenebit.*"

A. L. B.

Mill Bend, Tenn., Nov. 1, 1854.

GRAPE CULTURE AND WINE MANUFACTURE IN OHIO.

THE *Cincinnati Gazette* contains a long and interesting article on the grape culture and wine manufacture in that vicinity. It appears that in 1846 there were 83 vineyards in the neighborhood of Cincinnati, containing 248 acres under cultivation, and 114 bearing, and although the crop the preceding year was but a partial one, 24,0000 gallons was the yield. In 1852, 1200 acres were in cultivation, 750 bearing; the annual yield was supposed to be 500,000 gallons, and the value of sparkling wine alone $175,000. A bushel of grapes will make from 3 to 3½ gallons of juice. Mr. Buchanan commenced planting his vineyard in 1843; in 1850 from three acres he realized, beside the cuttings, 1640 gallons wine. In 1853 he obtained from five acres 4326 gallons, or 847 gallons per acre. In particular spots there have been obtained 800 gallons from an acre, but 650 gallons is considered a large yield. The demand for Catawba wine is far ahead of the supply, and the quality is constantly being improved, both by the cultivators and those who prepare it for market.

RUMINATION

The following article from the *Genesee Farmer* clearly and briefly describes this mysterious process. It also explains the importance of fully incorporating *all the grain* that is fed to stock in the form of fine meal with the coarse food. It has been found by those who have fed crushed corn and cob in a dry state, as many are in the habit of doing, that its effect is injurious to the intestines of the animal, beside the great loss sustained by feeding it in that state. Animals fed on meal, bran, or "brewers' grains and distillers' wash" will not long remain in a healthy condition. All the important organs adapted to the process of rumination remain inactive and dormant and must finally result in disease and the death of the animal, but not so when these substances are incorporated in the coarser food:

"*Rumination* is the re-mastication of food by a ruminant animal. Liquid or attenuated food passes at once into the third and fourth stomachs, and is not re-masticated; but all other food, particularly such as consists of comparatively dry and solid vegetable matter, descends into the rumen, is there slowly macerated, passes by little and little into the second stomach, and is there separated by compression into a liquid and a solid portion—the liquid to pass on to the third and the fourth stomachs, and the solid to be returned in pellets up to the gullet for such re-mastication as shall reduce it to a pulp, and fit it to pass direct, by re-deglutition, into the third and the fourth stomachs. The re-mastication is effected while the animal lies at ease, and constitutes what is popularly called 'chewing the cud' and takes place only upon matter which nothing short of an operose process can reduce to perfect pulpiness or liquidity; and the regorging which attends it differs widely from the belching or vomiting of a non-ruminant animal, and is as regularly conducted by a specially constituted organism as deglutition or absorption or secretion or any other ordinary act or function of the animal system.

In order to understand the process of rumination, we must advert to the manner in which the four stomachs communicate with the gullet, and with one another. The gullet is an extensive membranous tube, much more complicated in ruminating quadrupeds than in man, the muscles which surround it being strong, and consisting of two rows of fibres, crossing one another, and running spirally in opposite directions; and these muscles, by their contractions, so powerfully force the morsel of food begun to be swallowed onward into the inlet of the stomachs, that the process of deglutition once commenced can not be stopped, even by the will of the animal. The gullet enters just where the first, second, and third stomachs approach one another, and discharges itself almost equally into the first and second. Connected with it is another organ which may be termed the cud-duct. This is sometimes a groove and sometimes a tube, according to its action; and runs from the termination of the gullet to the third stomach, with the first stomach on the left, and the second on the right, and discharges itself almost equally into the second and the third. It has thick prominent margins, which can be brought to meet so as to form a complete canal, and thus constitute a continuation of the gullet across the second stomach into the third. All these parts, the gullet, the cud-duct, the first, the second, and the third stomachs, not only communicate with one another, but all communicate by a common point, the point where the gullet terminates, where the cud-duct commences, and toward which the three stomachs open or end. Now, in the process of returning the macerated

food for re-mastication, it is the cud-duct, together with the shut termination of the gullet approached to the shut inlet of the manyplies, which forms the pellets. To understand the mechanism by which these are moulded, let it be marked, first, that the cud-duct extends from the termination of the gullet to the inlet of the manyplies; secondly, that, when it contracts, it approaches one or the other of these apertures; thirdly, that of these two apertures, the termination of the gullet is habitually shut, and the inlet of the manyplies, naturally straight, can be so narrowed as almost to close by its own contraction; and, fourthly, that when the first two stomachs, compressed by the abdominal muscles and the midriff, contract, they push in consequence the materials which they contain both against the two apertures opposite to each other, and against the cud-duct opposite the two stomachs. The two stomachs, in this manner, in proportion as they contract, push the materials contained in them between the margins of the cud-duct, and the cud-duct also contracting, causes the two apertures of the gullet and of the manyplies to approach, while the two apertures being closed and brought near together, seize upon a portion of the aliment, and detach it in the form of a pellet. The aperture of the gullet is closed during the act of detaching the pellet, because at that instant the midriff is contracted, and it only opens when the midriff is relaxed; and the aperture of the manyplies is closed, because at that instant the manyplies, as well as other stomachs, is contracted. From these circumstances it is obvious that the pellet must be detached, as it could not otherwise be seized by the two approaching apertures—that the pellet must be round, for this is the form of the cavity formed by the parts of the organ employed in the process—and that the pellet must be about an inch in diameter, for the cud-duct, when contracted in the act of forming the pellet, is about an inch in length. How beautiful a contrivance—how exquisitely adapted to the structure and wants of the animal—and how minutely and highly illustrative of the all-pervading beneficence and skill which everywhere shine out in the works of the Creator!

One important practical lesson suggested by the nature of rumination is the proper feeding of cows, in order to produce the greatest quantity of milk. If they are fed on very dry food, such as hay, the greater portion of fluids in the blood will be spent in the process of rumination and digestion, and the milk will be scanty; but if they be fed on aliment which abounds in liquid, such as mangel wurtzel or brewers' grains, and distillers' wash, as in Holland, they will ruminate much less; a quantity of saliva will be wanted for chewing the cud, and a large proportion will go to the production of milk, though this will be thinner, and not so rich in cream as the milk produced from drier food. It is questionable whether cows fed wholly on distillers' wash would ruminate at all any more than calves, which, so long as they suck, never ruminate.

Another important practical lesson has reference to the giving of medicines, and is stated as follows by Clater: "We may, to a great extent, send medicine into what stomach we please. We may give it in a ball, and it will fall into the paunch, and thence go the round of all the stomachs; or it may be exhibited in a fluid form, and gently poured down, and the greater part of it passed at once into the third and fourth stomachs. That which is meant to have a speedy action on the constitution or the disease should be given in a fluid form. That also which is particularly disagreeable should be thus given, otherwise it will enter the paunch and be returned again in the process of rumination, and disgust the animal, and perhaps cause rumination to cease at once. This would always be a dangerous thing, for the

food retained in the paunch would soon begin to ferment, and become a new source of irritation and disease."

A third important practical lesson has reference to the sweating of the domestic ruminants, particularly sheep. Sweat is the production of the fluid portion of the blood, or arises from the same source as the salivary secretion employed in rumination; and hence the flow of it is more to be dreaded in ruminating animals than in others, inasmuch as it greatly diminishes the supply of fluid which ought to be employed in rumination. If sheep are sweating while they ruminate, there will be two evacuations of fluid at the same time, the body will be dried, and the blood exhausted and heated by the loss, while thirst will supervene, so as to make them drink till they are incommoded and their temperament altered. Sweating is also hurtful to sheep in other respects, for the fibres of their wool are thereby deprived of a part of their nourishment, which the sweat carries out of their body, while the heat which occasions the sweat causes the wool to grow too rapidly to acquire sufficient consistence."

TO RAISE GIANT ASPARAGUS.

A WRITER in one of the early volumes of the *Horticulturist* tells us how to grow common asparagus so that it will always rival any giant production. He says:

"Every one who has seen my beds has begged me for the seed—thinking it a new sort—but I have pointed to the manure heap—(the farmer's best bank)—and told them that the secret all laid there. The sight was only such as might be seen in every garden.

About the first of November, as soon as the frost has well blackened the asparagus tops, I take the scythe and mow all down close to the surface of the bed; let it lie a day or two, then set fire to the heap of stalks, burn it to ashes, and spread the ashes over the bed.

I then go to my barn-yard; I take a load of clean, fresh stable manure, and add thereto half a bushel of hen-dung; turning over and mixing the whole together throughout. This makes a pretty powerful compost. I apply one such load to every twenty feet in length of my asparagus beds which are six feet wide. With a strong three-pronged spud or fork I dig this dressing under. The whole is now left for the winter.

In the spring, as early as possible, I turn the top of the bed over lightly once more. Now, as the asparagus grows naturally on the side of the ocean, and loves salt water, I give it an unusual supply of its favorite condiment. I cover the surface of the bed about a quarter of an inch thick with fine packing salt; it is not too much. As the spring rains come down, it gradually dissolves. Not a weed will appear during the whole season. Every thing else, pigweed, purslin, all refused to grow on top of my asparagus beds. But it would do your eyes good to see the strong, stout, tender stalks of the plant itself push up through the surface early in the season. I do not at all stretch a point when I say that they are as large around as my hoe-handle, and as tender and succulent as any I ever tasted. The same round of treatment is given to my bed every year."

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

HOPS IN LAMOILLE COUNTY, VT.

Messrs. Editors: When the hop was in blossom, about the 16th of July, the crop looked very unpromising. Many thought they would not be worth harvesting. The 22d July, we had a shower that wet the earth one inch, and about the same quantity the 6th August, which gave the hops a remarkable start. The growers estimate a half crop.

There are in Hyde-Park 110 persons engaged in hop-culture the present year. The quantity raised is 75 tons; price, 22 to 30 cents; average, 26 cents; which makes about $40,000 received by our farmers for this one article.

The hop is grown the present year in nearly every town in our county. The Inspector estimates the amount of money paid for this article in the county to amount to $100,000.

Several of our growers last spring, sold hop-roots to the amount of $100. This article has contributed more to the independence of our yeomanry than any other branch of agriculture. Many who ten years since were quite poor, are now above want. Ariel Hunton.

Hyde-Park, Nov. 22, 1854.

SUCCULENT FOOD FOR MILCH-COWS, ETC.

We think our farmers greatly mistake in feeding cattle, and especially milch-cows, with dry feed. We may philosophize as we will, but facts seem to warrant the conclusion, that succulent feed is more nutritious than dry feed and an extra amount of water. This we believe is the explanation (if it can be called explanation) of the fact that carrots, pumpkins, etc., are so useful as feed during the winter months. We have often referred to this subject, and now confirm the views already presented by the following experiments, taken from two or three exchanges. They strengthen us in the opinion that roots ought to be cultivated far more extensively than they are. The first is from the *Maine Farmer*.

Raising Carrots.—Mr. Editor: I have noticed in your paper, lately, several articles on raising carrots, which induce me to give you an account of what I have done in that way this season. I have gathered 220 bushels of yellow carrots from forty rods of land, that will weigh 4½ tons, or 18 tons to the acre, and making 880 bushels per acre, which I think is not a bad crop for a farmer to raise. I have sold about 2½ tons, at $20 per ton, by carting about three miles. Zeba Bliss.

Auburn, Me., Nov., 1854.

Then follows another statement from the same sheet, as below:

Value of Carrots for Milch-Cows.—Messrs. Editors: I have tried feeding carrots to milch-cows, and will give you one of my experiments. I have (April 15) seven cows in milk; one calved in June, the rest in September and October. I raised eighty bushels ruta-bagas and four hundred bushels carrots, and fed them to my cows, commencing the first of December.

I gave them about 2½ bushels per day, at noon, the ruta-bagas first, and when they were all fed out, the same quantity of carrots. I found, when I had fed the latter a few days, that my cows were each giving from two to three pints of milk more per day than when fed on ruta-bagas. I was feeding my cows, meanwhile, with cut-hay, and 2 lbs. oil-cake and meal, and 2½ lbs. wheat-screenings, ground. The thought struck me that I should like to know the value of carrots for making milk; so I selected the cow that calved last for the trial. I weighed the hay, meal, and carrots, and fed perhaps 20 lbs. of hay, 4½ lbs. of mixed meal, and 22 lbs. of carrots, and she gave 35 lbs. of milk per day. I then left off the carrots and gave the same amount of meal, and all the hay she would eat, which was 33 lbs. per day. After feeding so for a week, I found she gave 23 lbs. of milk per day. I then gave her the carrots as before, and in eight or ten days she came up again to 35 lbs. of milk per day.

This shows that carrots are worth to me to feed cows, 82 cents per 100 lbs. Hay is worth $20 per ton in the barn, and at three cents per quart, or one cent per pound, for milk, 6 lbs. less hay, and 12 lbs. more milk, gives 18 cents for 22 lbs. of carrots. Next winter I hope to have another opportunity for experiment.—*Rural New-Yorker.*

Another writer in the *Germantown Telegraph* recommends pumpkins, and for the same reason. He says:

"I cut my pumpkins into eighths, and then submit them to the operation of the 'rasper,' and a better feed for most animals than they make I do not want. The process is a summary one, and the pumpkin is presented in a condition which might well tempt the human palate. In the winter, mixed with chaffed hay, or refuse-matter of any sort, and a little cob-meal, it makes a most grateful feed, and one that all animals devour with the keenest avidity. Apples, rasped in the same way, are also much liked by stock If sweet, very little other food will be required, sweet apples being very alimentary, and very salutary in their effects upon the animal system—especially upon cows in milk, causing a healthy action on the secretory glands, and consequently causing a copious and sustained flow of the richest milk.

One great reason why there is so frequent and general a failure of the lactescent product during the winter months, is the privation of succulent aliment which these animals are subjected to. In very many, perhaps in a majority of cases, the only food they receive from the time they are taken from the pasture, until they return to it again the subsequent spring, is dry hay, or stalks; no roots are given them, because their owners don't think roots worth raising, and if they are allowed an occasional feed of meal or unground grain, it is given to them *dry*, without any previous preparation, not even so much as a moistening of water being allowed. Now, this is a perversion of all reason, and as directly opposed to the obvious requirements of nature as any thing well can be. Let a man be confined during a period of eight months to dry biscuit, with only an occasional flagon of spring-water, and that half of the time of poor quality, and what suppose you, Mr. Editor, would be his condition at the end of the term? Would not the privation of succulent food operate injuriously upon both the fluids and solids of his system? It appears reasonable to suppose it would. Now, what is the legitimate inference in the case of the cow or other domestic animals? Every one can answer."

The same sentiments are expressed in the following from the *New-England Farmer:*

"If you desire your cows to yield liberally to the pail, you must feed them

with something better suited to the secretion of rich milk than *dry* provender. Chopped roots, or meal-slops of some kind, should be given them twice a day, at least, say morning and evening. They should also be provided with littered beds, dry lodgings—moderately warm; be regularly watered thrice each day, just before being fed; be curried or combed once a day, and salt, with occasionally a little ashes or fine bone-dust mixed, two or three times a week. They also like a *variety* of food. Roots, cut or rasped, and mixed with cut-hay or straw, then stirred and left for an hour or two, make a mess which they will eat very greedily. We think that hardly attention enough is given to the *bedding* of cows, as the more quiet and comfortable they are, the less food will be required to sustain the system, and may therefore go to produce flesh or milk. A gentleman who has constantly employed several pairs of working oxen for many years, states that oxen will travel fifteen miles a day, being well 'littered down' at night, as easy as twelve miles and lie upon the bare floor. If this statement be correct—and it seems to us consistent—it is a pretty important matter that all our cattle are well provided for in this respect."

DISEASES OF THE UDDER AND TEATS IN COWS.

The subjoined cases of disease, injury, and obstruction in the teats and udder of cows will furnish useful hints to many agriculturists and graziers, and are likely to be of interest to all our readers. They are taken from a paper, with title as above, in the *Veterinarian* for September, (an English publication by Mr. W. A. Cartwright, a veterinary surgeon of high reputation.)

Case 1.—*Obstruction in a Cow's Teat.*—In 1831, I was called to attend a cow, the property of Mr. Tudmam, of Yoking's Gate, near this town, that had calved a week ago, and had borne two calves before. There was an obstruction up one of the teats, and the udder was very much distended with milk. I merely introduced a knitting-needle up it for about two inches, and broke down two different pieces of coagulum or membrane that crossed it, and the milk could be immediately drawn off, and she did well without any further trouble.

Case 2.—*Injury to a Cow's Teat.*—17th of September, 1845, Mr. G-ratt, timber merchant of this town, had a cow that had just met with an injury to one of her teats, in having a little of the end of it cut off slantwise. Although we fomented the parts, bled her, and repeatedly passed the silver milk-tube up it, yet she became "gargated," and lost her quarter.

When the teat is injured, we scarcely ever do any good. At first, the milk becomes obstructed in the teat, and, by the introduction of the tube, the teat and, ultimately, the udder become inflamed. Then scarcely any milk flows, and what comes is frequently bloody; but soon it entirely ceases. Now only some scrum can be drawn out, and soon this ceases. Next, pus forms, and which sometimes comes out in clots; at others it is tolerably liquid; and if it can not be well got out, the udder hardens in places, and abscesses form, and now the udder is completely destroyed for secreting milk, and she is completely "gargated."

In April, 1846, this same teat again became highly inflamed and swollen, and pus formed within it. I inserted caustic lints in its orifice, which was nearly closed up; a slough come out, and the pus discharged well. Abscesses afterward formed in the udder, which (the abscesses) ultimately got well, but the udder became scirrhous.

Case 3.—*Obstruction in a Cow's Teat.*—April 17, 1844, was sent for to attend a cow that had calved yesterday; no milk could be got out of the anterior off-teat. On examining it, I found that at about an inch and a half up it there was a thickening for about half an inch in length of the lining membrane, and no doubt the sides of which were united, and the passage was completely obstructed. I first passed a probe, and forced it through, after which I passed a silver tube up it, and then the milk ran freely and relieved the udder.

On the 18th and 19th, I introduced the tube pretty easily, and the milk ran through it readily, and I was in hopes that the tumor, a "thunk," as it is called about here, in the passage would become absorbed. Some of the milk could be drawn by the hand after the tube was removed.

20th.—I introduced the tube again, but no milk came out. The teat was sore, and from the orifice a little blood oozed out. To be left alone.

21st.—The teat and udder were much sorer, and the orifice was closed up and swollen, and a little blood oozed out. With some little trouble, I again introduced the silver probe, and milk passed very fluently. I forgot to observe that this cow was bred by the owner, and that nothing had ever been amiss with her teat before, and she was well when she was loosed dry.

29th.—The milk has been got out very well, and the udder is very soft; but from some cause or other, the teat is now a good deal diseased, as it is difficult to introduce the tube. Pus and serum are now within it. The tumor in the teat is as hard as ever, and the tube is obliged to be still forced through it. I fancy the teat has become inflamed from rubbing some Ung. Potas. Iodid. on it and the udder, and from another person forcing the tube up. This case I left off attending, in consequence of other interference; abscesses formed, and she lost the quarter.

Case 4.—*Obstruction in a Cow's Teats.*—13th April, 1844, I was sent for to a cow that had been purchased at our fair on the 11th inst., that had got obstructions in two of her teats; she had calved two or three days before she was bought; no milk could be got out of the hinder teat on the off side, or any out of the anterior one on the near side; the obstruction was about half way up in each teat, and I could not pass even the silver probe through the off-teat. I did so in the other, but could not, on account of the smallness of the orifice of the teats, introduce the silver tube into either of them. Both quarters took good ways, and nothing more was done but fomenting, drawing, and hand-rubbing the teats and udder, which became quite soft, and the milk flowed out well.

Case 5.—*Obstruction in a Cow's Teat.*—June 6, 1843. Mr. Green, shoemaker in this town, purchased a cow at our late fair, and at the time of purchase her udder was freely distended with milk; at night she was milked, and it was found that from only three of the quarters could the milk be entirely drawn off. From the other he could extract only about half a teacupful, when it would cease; but in a short time the lower part would be filled again, and in the same way only a similar quantity could be obtained. The owner took her again on my pronouncing her unsound.

Observations.—The obstruction in this case lay at the upper part of the teat, and there must have been a stricture there, as there was only a small orifice to admit the milk through. I could not detect any thickening or tumor about the parts. Not near all the milk was obtained from the quarter, yet it was not coägulated.

Case 6.—*Obstruction at the Ends of a Heifer's Teats.*—18th of March, 1845, I was called in to see a two-year-old heifer, belonging to Mr. Tomlin-

son, of the Chinnell. She was about a month off calving. At the very end of the teats there was substance like a smooth wart hanging from them, and one was half an inch long, the other not so long. They were closely adherent, and closed up the orifices of the teats. As they did not look like the common wart, I plucked them away. When away, I found they left a concavity at the end of each teat, and the orifice of each teat was perfectly exposed, and the ends and whole of the teats were soft and natural. The substances removed were similar in appearance to masses of gum arabic, and were formed of concentric layers on each other.

I am inclined to think that they were formed from a secretion on the inside or orifice of the teats, and as it oozed out became a hardened mass. Ordered the teats to be occasionally well soaked in warm water, to supple the parts, and to remove any fresh deposit.

SHEEP AND WOOL.

Axioms in Sheep Husbandry.—It is an axiom with good shepherds that sheep should never be permitted to get poor in the fall. Hence, as the feed becomes short and frost-bitten, especial care should be given to the flock, and here the farmer often finds himself at a loss. He wishes to spare his store of fodder as long as he can, and, indeed, while the ground is bare sheep care little for hay, unless shut entirely from grass. Between "hay and grass" sheep often lose an amount of flesh which they are not able to regain through the winter. A good plan now is to give the best food to be had; yard them on cold or stormy nights; feed them a little good hay or sheaf oats in the morning, and let them run during that day, if the weather is sufficiently moderate. Remembering that they need care and attention, and that *they* should be kept in as good condition as possible, use your own judgment as to the means to be employed.

Another axiom is, never let a sheep grow poor in winter. It is very hard work to recruit and bring up a half-starved sheep, even if not diseased, and often, when the warm days of spring come, they fail one by one, and careless farmers' back-lots are strewn with scattered crow-baits. The best remedy is to keep them from getting poor. If one have a large flock, the sheep should be classed off early in winter into smaller flocks, according to their age and strength, and then be fed accordingly. If they once get poor, a little grain seems to have no good effect; but a little grain given to sheep in good order will assist a good deal in keeping them so. It is a pleasant business to feed a fine flock of sheep in steady cold weather, while nothing can be more unpleasant than the care of a poor half-starved flock in the trying weather of March and April.

The true way is to never let sheep get poor at any season of the year. This is *the* axiom in sheep husbandry.—*Wool-Grower.*

Feeding Sheep with other Stock.—Sheep should not run or be fed in yards with any other stock. Cattle hook them, often mortally. Colts tease and frequently injure them. It is often said that "colts will pick up what sheep leave." Well-managed sheep rarely leave any thing, and if they chance to, it is better to rake it up and throw it into the colt's yard than to feed them altogether. If sheep are not required to eat their feed very clean,

they will soon learn to waste large quantities. But if sheep are over-fed with either hay or grain, it is not proper to compel them by starvation to come back and eat it. They will not, unless sorely pinched. Clean out the troughs, or rake up the hay, and the next time feed less.

South-Carolina Wool.—The *Charleston Mercury* says the experiment of rearing fine breeds of sheep for wool, in the upper part of South-Carolina, promises to be completely successful. Several gentlemen who have engaged in the trial have come to the conclusion that sheep flourish remarkably well throughout the State; that they can be raised at a trifling cost compared with that of the wool-growing regions of the North, and that the quality of the wool of choice European breeds does not degenerate. Specimens of the wool have been rated by English manufacturers at the top of the market. The *Mercury* thinks that wool-growing, if properly followed up, will prove a source of wealth to the upper districts of the State.

The Wool-Trade in Ohio.—The following circular was issued, Nov. 21, from the office of the Cleveland Wool-Depot:

"In placing before you our monthly report, we take great pleasure in stating that the dullness in the wool market noticed in our former circulars, has materially improved, and sales since our last foot up 311,427 pounds, at prices ranging from twenty-seven to fifty-seven cents. Accounts of sales will be sent to those whose wool is sold, with the least possible delay, and the proceeds remitted as they may direct; and we have no doubt that under the existing stringent state of the money-market, the returns will prove entirely satisfactory to our consignors.

We regret to announce to our friends that, owing to Mr. Perkins' private matters, he has deemed it advisable to withdraw his connection from this house, and in doing so permits us to express his entire approbation of the manner in which the business has been conducted, and trusts the same *liberal patronage* will continue to be extended to the Cleveland Wool-Depot.

This change will in no way affect our business, which will be conducted in the same name, and we shall continue to devote our undivided *attention* and efforts to the best interests of our consignors."

New Food for Sheep.—Whilst I was at Geneva, I observed every one collecting carefully the fruit of the horse-chestnut, and on inquiry I learned that the butchers and holders of grazing-stock bought it readily at a certain price per bushel. I inquired of my butcher, and he told me it was given to those sheep in particular that were fattening. The horse-chestnuts were well crushed; something in the way, so I understood, that apples are, previous to cider being made. They are crushed or cut up in a machine kept solely in Switzerland for that purpose; then about two pounds' weight is given to each sheep morning and evening. It must be portioned out to the sheep, as too much would disagree with them, being of a very heating nature. The butcher told me hat; it gave an excellent, rich flavor to the meat. The Geneva mutton is noted for being as highly flavored as any in England or Wales.—*Ag. Gaz.*

Great Fleece.—We are informed that Mark Ranney, Esq., of Salisbury, in this county, sheared about the middle of May, from eighteen Spanish merino sheep, two years old, (of the Atwood breed,) one hundred and sixty-four pounds and four ounces of fine wool—averaging, as will be seen, 9 lbs. and 2 oz. a piece. In the number above stated, is included one buck, same age, that sheared 20 lbs. 8 oz. This flock has been kept with his other sheep, and has had the same feed.—*Middlebury Register.*

THE BEST SORT OF FOOD.

Physiology and medicine have established the fact that it is necessary, in order to keep the human body in full vigor and health, that the food of man should be varied. Bread alone is not sufficient to give the body sufficient strength and to keep it in a perfect state of health. To understand throughly the importance of the change of food, it is necessary to study the nature of each kind of food and the part it acts in the support of life. Food serves two distinct purposes: 1. To produce heat; 2. To restore the losses occasioned through the activity of the vital functions. Experience has shown that the food of a laborer should contain each day 310 grammes of calorific and 130 grammes of restoring elements. When we examine into how much of these elements are furnished by the common articles of food, we find that

100 grammes of bread furnish 8 gr. of restoring and 30 of calorific elements.

100 grammes of meat without bones, 20 gr. of restoring and 11 of calorific elements.

100 grammes of beans, 30 gr. of restoring and 40 of calorific elements.

100 grammes of rice, 7 gr. of restoring and 43 of calorific elements.

100 grammes of oat meal, 12 gr. of restoring and 41 of calorific elements.

From this we see that 4 lbs. of bread would be necessary for a man to supply the system with 130 grammes of restoring elements a day; but it would produce 555 grammes of calorific elements, consequently about 245 grammes too much. A slight change shows the advantage of varied food. For instance:

1000 grammes of bread contain 80 gr. restoring and 300 calorific elements; 300 grammes of meat contain 60 gr. restoring and 33 calorific elements—together, 140 gr. restoring and 333 calorific elements.

600 grammes of bread contain 40 gr. restoring and 180 calorific elements; 300 grammes of beans contain 90 gr. restoring and 120 calorific elements—together, 130 gr. restoring and 300 gr. calorific elements.

One or the other of the above changes furnish the body with the two elements *in sufficient* quantity but without excess. At the present high price of breadstuffs in France, the necessary supply of food, consisting in bread alone, would cost 93 centimes (about 18 cents;) bread and meat, 85 centimes; bread and beans, 48 centimes. Thus economy is here in conformity with the rules of hygiene. The laborer will do well not to live entirely on bread, as it is often the case with the French people, but to add either some meat or another kind of farinaceous food which will supply the necessary amount of restoring elements.—*Exchange.*

SOMETHING FOR THE CURIOUS.

I have a hen of rather large size, of what particular breed I know not, of what is called a partridge-color, which has laid two extremely large eggs. They were blown, to discharge their contents, and within each of those eggs was another egg, the size of those laid by small hens, covered with a shell apparently as hard as is usual. The outside egg of both contained a yolk, and white. One of these I gave to my friend, Rev. Zadock Thompson, of Burlington; the other is before me, and measures in circumference, the longest way, 8¾ inches, the shortest way, 7⅛ inches. It may be seen at any time at my study at Hyde-Park. Ariel Hunton.

HEAVES, OR BROKEN-WIND.

We take the following extracts from Dr. Dadd's *Modern Horse-Doctor:*

"The disease bears some resemblance to asthma in the human subject, for in each there is nearly the same difficulty in respiration, attended with dyspepsia and emaciation; there is this difference, however—in man there are remissions; while in the horse with confirmed heaves (broken-wind) there is scarcely any cessation. It is quite common in Massachusetts, to hear horsemen define every case of abdominal respiration as heaves; such are not to be considered, however, as so many cases of broken-wind. In order to make out a pure case of the latter, we must have a kind of jerking, double-flank movement, in the process of expiration. Distension of the lungs, or inspiration, must be followed by a corresponding extension of the chest and flanks. A slight cough is generally present, which has a wheezing sound, sometimes resembling a sort of grunt, and the subject is a confirmed dyspeptic, having a voracious appetite, staring coat, large belly, spare muscles, dull, miserable look, drooping head, unwilling to travel fast, and, when urged to do so, becomes soon exhausted; the excretions also indicate derangement of the digestive organs. These are the principal symptoms of broken-wind, and we have generally found these present in what is called 'heaves.'

Regarding the name of broken-wind—which, however, is a very funny name for a pathological condition of this character—it originates in disease occurring in the organs of digestion or of respiration; the former affecting the latter by the sympathy that is known to exist between them, or else from innutrition—the digestive organs failing to furnish the proper amount of nutrimental matter to supply the respiratory apparatus with its required fuel. The lungs, or rather its air-cells, are then dilated, while the respiratory passages and lining membranes are contracted or lessened in calibre, either from contraction of their tubes or thickening of their lining membranes; and this state of the parts is all that we require to explain the peculiar phenomena of *abdominal respiration.* * * The direct causes of heaves or broken-wind are over-exertion and indigestion.

Treatment.—The object is to improve the patient's health; and if we can do this successfully, an improvement in a curable case generally follows. We must restore digestion in order to cure indigestion, and in this view we give aromatic tonics. The following we have used with considerable success: Tincture of aromatic sulphuric acid; dose, one drachm in a pint of water, night and morning; most animals, however, will drink it from a bucket. In the mean time we put the animal on a course of the following alterative medicine: powdered ginger, gentian, sulphur, salt, cream of tartar, charcoal, licorice, elecampane, carraway-seeds, and balm of Gilead buds, (chopped fine,) equal parts. Dose, one ounce every night, in the food.

Changes in air, exercise, and management, calculated to fulfill the indications alluded to above are indispensable. So soon as considerable improvement is perceptible, the aromatic tincture should be omitted; and instead of giving one ounce of the alterative as a dose, give half ounce night and morning. A broken-winded horse should always be watered from a bucket, regularly three times a day; and if he be a foul feeder, arm him with a muzzle, and only remove it at meal-time. In addition to the above remedies, we occasionally allow a small quantity of garlic, say a couple of heads every other day, chopped fine, and mixed in the food."

GUANO AND PEAT ON POTATOES.

We have frequently recommended Peruvian guano as a manure for potatoes, thinking, from their comparatively high price, that its application would be found not only beneficial but profitable. Two years ago, H. C. Ives, Esq., at our recommendation, applied 600 lbs. of Peruvian guano on two acres of potatoes, and left other two acres adjoining without any thing. The guanoed two acres yielded 410 bushels, and the unguanoed two acres 238 bushels, and thus 300 lbs. of Peruvian guano per acre, costing about $9, gave an increase of 86 bushels.

This year, Mr. Charles W. Seelye, of Rochester, applied 300 lbs. of Peruvian guano on two acres of potatoes, leaving four rows in the centre of the field without any dressing. The two acres produced about 225 bushels. The four rows without guano gave 11 bushels, and four rows the same length which received guano, gave 14 bushels. This is equal to an increase of 24 bushels per acre, and estimating them worth half a dollar per bushel, (a portion of the crop was sold on the ground at 62½ cents per bushel,) will certainly yield a handsome return for the $4.50 invested in guano. We saw these potatoes early in the summer, and the difference between the four rows, and the guanoed portions on each side, was very perceptible, and indicated a much greater increase than was realized. This was probably owing to the great drought which shortly afterward set in, for it is well known that guano requires a moist season to bring out its full effect. The small increase, as compared with Mr. Ives' experiment, is also probably owing to the same cause. Peruvian guano has been used in England, as a manure for potatoes, to a considerable extent, for eight or ten years. We may fairly conclude, therefore, that English farmers find its application profitable; otherwise, the practice would soon be abandoned. But potatoes generally command a higher price here than in England, and if guano is a profitable manure for potatoes there, why is it not at least equally so here? Guano will give as great an increase of wheat here as there; in fact, if we may credit the statements of Virginia and Maryland farmers, it gives a somewhat greater increase; but its application here, as a general thing, will not be so profitable as in England, because wheat sells at a much lower price. With potatoes, carrots, cabbage, beets, onions, etc., the reverse holds true, and we believe a judicious application of *good* Peruvian guano will be found profitable. Under some circumstances, when hay is high, it will also yield a good return on meadow-land. If any of our readers have used guano, nitrate of soda, "Mapes' improved," or other super-phosphate of lime, we should be glad to hear from them.—*Rural New-Yorker.*

Peat for Potatoes.—Rev. Mr. Clift, of Stonington, Ct., relates the following experiments, made by himself the past season, to test the value of peat as a dressing for potatoes. He says:

"From the fact that potatoes have almost uniformly done well in reclaimed peat swamps, even when the rot was extensive in other places, we inferred that it would be a good dressing for potatoes. The part of the garden selected for the experiment had been trenched, and manured in the bottom of the trenches with the contents of the pig-sty. On the 24th of May, we planted three drills, about twenty feet in length, with large, sound potatoes. In drill No. 1, nothing was put. In No. 2, several bushels of peat, that had

been thrown up for the action of the winter frosts upon it, were spread over the potatoes. In No. 3, one quart of guano was carefully sprinkled.

The potatoes were dug and weighed on the 31st of August. No. 1 gave thirteen pounds; No. 2, twenty-one pounds; No. 3, nine pounds. Those in the peat were much larger and fairer than the others, and lacked a pound of equalling the weight of the other two rows. The season being exceedingly dry has been unusually favorable to the success of the peat. It has retained the moisture, so that they have suffered less from drouth than the adjoining rows. It has been quite as unfavorable for the guano, that manure requiring to be ploughed in the preceding fall, or a wet season, to bring out all its virtues. It would not be safe to infer that peat was a better fertilizer than guano, though the product in this case was more than twice that of guano. But the experiment justifies the conclusion, that peat decomposed by the frost is an excellent application for potatoes."—*American Agriculturist.*

HOW THEY DIG ANTHRACITE COAL.

THE *Rochester Democrat* has a letter from Scranton, Pennsylvania, descriptive of the manner in which the authracite coal of that region is dug and conveyed to the surface:

The coal-bed is entered by a horizontal digging through earth and sand upheld by timbers for a few rods, till the coal is reached in a bed perhaps six feet thick, lying in the midst of a floor of rock on the bottom and top. This bed lies at the bottom of a hill, sloping upward to the west some hundred feet, and containing other beds above, and separated from this and each other by strata of rock, 25 feet between some, to 70 or 80 feet between other beds. This bed extends through the hill probably, and covers some hundred acres. Here the entrance is nearly horizontal, but the coal strata often has an inclination to the horizon from 10 to 35 degrees, according to the variation in the upheaving power by which they and the whole rocks have been raised from under the ocean in times long gone by, doubtless long before the race of Adam was placed on earth.

The coal is broken out by blasting, and a great many men and boys are employed in this process, and in removing the coal into the open air and daylight. A path is cut (by blasting) into the bed, wide enough for the carts drawn by mules to enter. At the proper distances cuts are made at right angles to the main path. These are cut across by paths parallel to the main path, and the coal borne away, thus leaving solid blocks of anthracite, perhaps 20 feet square, to uphold the strong roof of the bed between which the coal is removed 50 feet wide. Thus the bed is cut up into the figures of a chess board, the blocks remaining for the support, and not being moved like chessmen. More than half a mile of these cuttings are already made in this bed. The air within is cool, and ventilation is secured by sinking shafts from the surface above down to the cavity formed. As yet, no inconvenience is felt from the combustion of the gunpowder or confinement of the air, so completely is the ventilation secured by the process adopted.

The excavation must of course be dark as the blackest midnight. The workmen use oil-lamps to give them light. The boys who drive in the coal-carts and drive out thecoal, have each a small oil-lamp fastened to his hat for his own illumination. Viewed from some distance within, the scene is

wild and magical, and one thinks of pandemonium as the blackened Vulcans come along with their lighted lamps bobbing up and down. But the jokes, and songs, and pleasantry, and happy activity, soon convince you that this is another sort of pandemonium. The workmen and boys are said to be healthful, industrious, well paid, and prosperous, and find a competent support for a multitude of contented families, whose small and comfortable dwellings are scattered at various distances from the bed. The Lackawanna rolls on at a little distance, and has the power of whitening the coal-bearing faces and bodies of the laborers, especially if employed in adequate quantity.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

LIME: ITS USES, ETC.

MESSRS. EDITORS: Your valuable journal, *The Plough, the Loom, and the Anvil*, recommends the use of lime on certain soils. I have a small parcel of land (about two acres) that, according to the description given, requires lime. But I am in doubt how to apply it to the land; and all my neighbors seem to be as ignorant as myself about it.

Now will you please to inform the public, as well as myself, of the best mode of applying quick-lime to ploughed land, and also to grass. Please to state whether the lime should be pulverized, or whether it should be mixed with other substances, and also the best time to apply it; and you will much oblige your obedient servant, A SUBSCRIBER.

Marlboro', Mass., Nov. 20, 1854.

REPLY.

LIME may be used alone, and in a pure state, or it may be applied in combination with other substances. Gypsum, or the sulphate of lime, the artificial phosphate of lime, burnt bones, etc., etc., are all valuable. On lands exhausted by successive crops, either of these preparations of lime will be found more efficacious than lime by itself. In clayey soils, quick-lime, or the carbonate of lime, is of especial value. In connection with green crops ploughed in, it is also of essential service, as it hastens the decomposition of the organized matter. In peaty lands, pure lime is of especial value, in counteracting the acids which almost invariably are present in such soils. Newly-slacked lime may be scattered over the surface of grass-land, and ploughed in, or mingled with stable manure and ploughed in on any land, or it may be used in any compost, and applied in any form in which barn-yard manures are used. But it should not be covered deeply. It is most efficacious when near the surface.

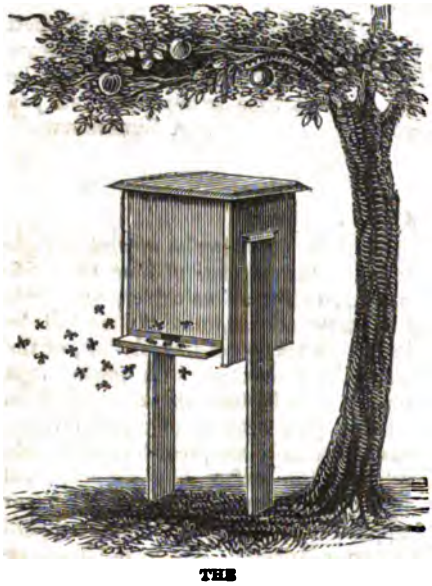
The process of slacking lime reduces it to a pulverized state, though in combination with a large quantity of water. Excess of water should not be used, as it is thereby rendered inconvenient to handle. If thrown into heaps, and allowed to *air-slack*, it will be still more thoroughly pulverized. On grass-land, the slacked lime may be scattered, either in fall or in spring. On ploughed lands, as a general thing, we should use it composted with turf, weeds, peat-soil, straw, leaves, barn-yard manure, etc., and any other organic matters; one or more of these, as they may be within reach. For such appli-

ostions, the spring is the best time. But if spread and *ploughed in*, in the fall, with a liberal supply of organic matters, as straw, turf, etc., this would, perhaps, be most efficient *for the next crop*. For application on the surface, the early spring is the proper time. This of course is always the mode of applying it to grass-lands. Running a light harrow over such lands, after the application of the lime, will be found useful.

As to the quantity to be applied, it is better to use moderate quantities often, than to be very liberal with a single dressing. Eighty bushels and upwards per acre should be used, according to the wants of the soil. For crops of rapid growth, a larger quantity is desirable than for those which act more slowly. Thus barley is more profited by a liberal supply of lime than is wheat, since the latter crop uses but thirteen pounds in six months, while barley takes up seventeen pounds in about three months.

All who use lime in its pure state, unmixed, should bear in mind that it has less effect during the season of its application than in the year or two following. It is otherwise when used in a compost.

DR. EDDY'S PROTECTIVE BEE-HIVE.



THE

PROTECTIVE BEE-HIVE,

THE following are set forth as the peculiar merits of this hive:

1. It furnishes complete protection against the encroachments of the bee-moth. By the use of a poisonous mixture, the deposit and hatching of its eggs is prevented. 2. It is easily ventilated in summer and winter. 3. It provides for the deposit and removal of surplus honey without a destruction of the bees. 4. The work and condition of the bees can be readily inspected. 5. It is a hive of very great durability. 6. It prevents the bees from clustering upon the outside of the hive. 7. In it bees are fed without inviting robbers from other hives. 8. It affords ample room to prevent the bees from swarming, when required. 9. It is easily cleared of dead bees and every other offending substance. 10. This hive is made for exposure to the weather, answering the purpose of hive and house, and on this account is the *cheapest* hive which can be used. 11. It dispenses with a bee-house, which affords a shelter for all kinds of insects. Its location is in the open air and *shade*, as represented above. 12. Bees are easily and safely transferred from the ordinary box-hive to this.

Its inventor is the author of a book upon bee-culture, which will be sent, post-paid, with a circular, to any person who shall forward nine letter-stamps to Henry Eddy, M.D., North-Bridgewater, Mass.

BEES: THEIR SOCIAL ORGANIZATION.—The social state of the honey-bee is peculiar. Each colony of bees is composed of a queen, workers, and drones.

THE QUEEN is the mother of the colony. She is the only fully developed female which propagates. Her fertility is very great. She often lays from twenty to sixty thousand eggs in a season. She lives from three to seven years.

THE WORKERS are very numerous, often amounting to twenty or thirty thousand in a single colony. They are *dwarfish females*, not sufficiently developed to incline them to propagate. They build comb, gather honey, nurse the young, and, in short, perform all the necessary work of the colony.

THE DRONES are males. They perform no labor. They often number from two to six hundred in a colony. The only service which they render is that of impregnating the queen. When this is done by a single drone, they are all massacred by the workers. They exist only from May to July or August. None of them are allowed to survive winter.

Dr. Eddy has kept an account of the cost and profit of his bees for two years, and finds that they have paid 654 per cent, that is, 327 per cent per annum. This is the average of his entire stock. Individual swarms have varied, he states, from one hundred to five hundred per cent. Others, using his hives, are said to have been equally successful. This gentleman has published a small treatise on the subject, which is well worthy the attention of those who keep bees. For his hives he has received several premiums; from the Massachusetts Mechanic Association, in 1853, (the only premium.) His terms are, for hive and right, $8; for individual right, $5. His residence is North-Bridgewater, Mass.

SHRUBBERY.

EXOTICS do not include all the beauty of the flower-garden. Our own hills and meadows produce plants which will bear comparison with any of foreign growth. What is more beautiful than the Lobelia Cardinalis, the Orchis Spectabilis, or Ciliaris, or Grandiflora, the Arethusa Bulbosa, the Aquilegia Canadensis, the Delphinium, the Thalictrum Uvularia, Dianthus, Althæ, Hibiscus, Epilobium, Trillium, Aster, Viola, Hepatica, Claytonia, one or more more species of each? No country furnishes a greater variety of beautiful flowers than our own.

Nor is it less rich in shrubs worthy of the garden of the most fastidious. The Kalmia Catifolia, with its beautiful bright flowers of May and June, is almost unmatched by an exotic; the Azalea Canadensis (or Rhodora Canadensis of Wood) with its equally beautiful white and pink flowers of April

and May; the Aronia, which blooms with the coming of the earliest spring; the Cornis Florida, that puzzle to the young botanist, with its involucre of four white petals, forming a showy flower; the Vernonica, the Hamamelis, or Witch-Hazel, with its peculiar yellow flower, so prominent upon its leafless branches in the late autumn; the unrivalled Magnolia, to say nothing of many other trees and shrubs, will give interest to the richest collections of exotics. In one of the splendid gardens of Eastern royalty—if we mistake not, that of the Emperor of China—the shrub so frequently met with, and so well known here, the Sumach, (Rhus,) occupies a very conspicuous place, and not without reason. In regions where it is not very common, it would always arrest attention. Rhus Glabra is very common in New-England, and is used in the arts. Six species, in the form of shrubs, (one of which, and one only, is poisonous,) are found scattered through the United States. There is also a vine, which sometimes grows erect, Rhus toxicodendron, or Poison Ivy, which is poisonous to some persons. Add to these our beautiful evergreens, the Larch, the Spruce, the Pine, the Fir, etc., and what more do you desire? Your grounds must be unusually extensive to give suitable place to all these. And every one of these can be found in our own forests at the North. The Southern States are still richer, we suppose, in such attractions, but we are not personally familiar with them.

None of these are of difficult culture. Their only essential requisite is a natural soil. In transplanting, a large quantity of soil should be taken, beside that which adheres to the root, forming a new soil in its new position.

There are certain plants, like the Saracenia, or side-saddle flower, the culture of which we have found most successfully secured by using a large "tin pan," in which the roots are deposited, and which is buried in the earth, and will retain the large supply of water it requires much more effectually than any other process we have tried. But among all the other plants we have named, there is not one which may not be successfully cultivated in almost every garden.

Beside these, there are native vines which are well worthy attention. The Clematis Virginiana, or Virgin's Bower, is one of these. It grows with very great rapidity, and its foliage, its flower, and its seed-vessel are all pretty. We have had it cover a surface six by twenty feet, in a single season, from the growth of two or three small roots.

Those who know these and other species of ornamental plants, may gain some time by transplanting them the present season, in a very careful manner, and giving them the benefit of the earliest rays of a vernal sun.

THE PEACH ROT.

An experienced pomologist states a fact that we have never seen published, and that is, that to produce a particular variety of peach, instead of innoculating it is only necessary to plant the entire fruit in the fall. If the peach be dried, it will do equally well. It is a simpler and cheaper method, and the tree comes into bearing sooner. We can account for the above result by the well-known law of nature, by which like produces like, which is strengthened when the pulp, which is the natural manure for the germ in the kernel, containing essential ingredients of the parent stock, nourishes its reproductive vigor. This

theory was confirmed by the demonstration of several trees which had evidently never been budded, and whose fruit was identical with that of their progenitor.

The writer of this article once knew a large peach-tree which was associated with his earliest recollections, and upon inquiry found that it was more than forty years old, while several generations of similar trees, in the same soil, had passed away. In New-Jersey and Delaware, it is necessary to renew the peach orchard every five or six years. This led to examination, and a bed of tansy was discovered about the trunk. Now, as this plant is very noxious to insects, its essential oil being used by entomologists to kill their specimens, and by old-fashioned housewives as a vermifuge and bug-bane, it was naturally inferred that the preservation of this tree to such a green old age, was attributable to the presence of this plant. It was decided to try the experiment on others, and accordingly a few of the roots were placed about each of the other trees on the premises, some of which gave signs of decay. These roots spread rapidly, so that it is necessary every year to cut away a portion of them. Not only has it preserved for several years the sound trees, but renovated those that were unsound. The odor of the plant doubtless keeps off the insect enemies of this kind of tree, and it might have the same effect on others, as the plum, apple, and pear, as well as the elm, sycamore, and other ornamental trees.

It is not pleasant to discredit the correctness of statements honestly made for the benefit of others, but we must confess our want of faith in this recipe given by an exchange. The alleged effect of tansy is perhaps a natural one. We know not why vermin may not have their likes or dislikes as well as others. We should at least recommend a trial. But we have known peach-trees bear well more than twenty years, without the benefit of this odorous herb. Our readers will also remember the statements of our valuable correspondent, R. B. B., who has taken quite too long a respite for ours or our readers' comfort, in reference to like producing like in this department of horticulture.

SCIENCE IN BLACKSMITHING.

The *Scientific American* says, "Sawing heated iron or steel, is not known or thought of by blacksmiths, and when several forks or branches are to be formed from one stock, even if the branches are required to remain eventually nearly in contact, and parallel to each other, the usual method is to split the end of the iron with an awkward chisel, thereby deforming the edge of each branch, which must be rent asunder for the purpose of hammering, squaring, and shaping the edge of each; after which they are brought together as well as may be, usually retaining a roughness in form, if not a deficiency of size near the juncture of the branches. Instead of this tedious process, the iron when heated may be put into a vice, and the ends may be readily slit with a suitable saw, which would save much labor in hammering and filing. A saw for this purpose should be made thicker at the edge than at the back and with uniform teeth one twelfth of an inch apart. The saw when used, must be often dipped in the water, to prevent its becoming too much heated. There is also a method of sawing or cutting hardened steel which is not as generally known as it should be; a circular piece of common hard iron plate, or sheet iron, being adjusted to a lath, or by other means put into violent rotary motion, will readily cut off a file, a cutting tool, tempered steel spring, without in the least re-

ducing the temper. There is much symmetry in the wonderful effects of this buzz, and its cutting property is attributed to electricity. It answers a very convenient purpose, however, when the shape is to be altered without affecting their temper. It furnishes a convenient method for cutting teeth to saws; but is objectionable on account of the newly-cut surface being left so hard that it can not be readily filed by a common file. Connected with the subject of "mysterious effects," it may be stated that a bar of iron of almost any size, may be instantly sundered while hot, by the application of a piece of common roll brimstone. A knowledge of this fact will be useful when some piece of iron-work is required to be severed, but which, as, is some times the case, is so constructed and situated that no ordinary chisel or cutting tool can be brought to apply. Holes may be instantly made through bars or plates of heated iron, by the application of pointed pieces of brimstone. This phenomenon is curious although it seldom affords much practical utility."

[We begin to think that we were born under some peculiarly favored star. Many years ago we were familiar with the operations above described by our learned neighbor, and in our simplicity supposed they were known to all the world. The "instantaneous" sundering of iron by a roll of brimstone is not so distinct in our memory, though we perfectly well remember the use of brimstone for such purposes. Whether it was applied in a *scientific* manner, we can not testify.—Eds. P. L., & A.

HOMOGRAPHY.

This new invention is a wonderful step onward, if the statements below are reliable. They are from the Paris correspondence of the *New-York Times:*

"Homography is a new art, an art of yesterday, or rather of to-day, for which the inventor makes the following extraordinary claims: Whoever possesses a printed book, possesses the stereotype plates of that book; whoever has an old lithograph, a copy of an extinct edition, an impression of a steel engraving, has, by a wonderful process of transfer, the original stone, the original type, the original plate, the original block. An octavo of 500 pages can be executed, at a trifling cost, in six days. Reprints cost but half the price of the first composition; and engravings, after expensive originals, may be made for a few sous. Stereotyping will be done away with; the first edition will be printed from type, and any one copy furnishes the plates for all successive editions. Rare editions are annihilated, as one copy may be multiplied to infinity, and that, too, with all the typographical peculiarities of the epoch in which it was first printed. Books in foreign languages, in dead languages, in Hebrew, in Greek, in Sanscrit, may be reproduced by workmen completely ignorant of them. The following is the history of the process, as described by Victor Meuieri, the scientific feuilletonist of the *Presse.*

The inventor, Mr. Edward Boyer, a chemist of Nimes, undertook to solve the problem that the inventor of lithography, Senefelder, of Munich, sought in vain to solve—to reproduce upon stone any typographical work, lithograph, or engraving, of which a single copy is in existence—to do it instantaneously, cheaply, without damaging the original, and so exactly that the most practised eye can not tell the difference, and finally to multiply the

copies to infinity. In principle, M. Boyer arrived at a solution in 1844; he has spent ten years in researches tending to simplify, cheapen, and render practicable the process. He has now succeeded, and stereotypes a quarto page in ten minutes, as he actually did in presence of M. Mennier. A cast of the Temptation of St. Anthony, which lately cost a Paris publisher $280, might have been furnished him by M. Boyer for two cents and a quarter!

The process is of course a secret, and will not be disclosed even in specifications for a patent. M. Boyer does not mean to patent his invention; he will control and superintend the business in France, and will sell the secret to foreign countries."

AMERICAN GAS COMPANY.

We informed our readers, not long since, that this Company had made such progress in their arrangements that they were prepared to receive orders for their lights. Since then they have made decisive improvements in the mechanism of their apparatus. They have not materially changed its design, but have improved greatly in the manner of making them and the accuracy of their workmanship. Their orders are more numerous than they can readily supply; and yet it is but a few weeks since the *Scientific American* contained a contemptuous fling at Paine's gas-light, and that sentiment was but the echo of a dozen or more of the presses of the country. We think scientific men would be likely at least to *look* at a light, burning constantly within a few blocks of them, where the public have so often been invited to call and see it, ere they averred or even insinuated that the very thought of it was a waste of effort.

We have the gratification of presenting those interested in this matter with the following very satisfactory evidence relating to this subject. At the Hampden County Cattle Fair, held at Springfield, Mass., one of these machines was on exhibition. Among the premiums we notice the following:

"Ten Dollars and Diploma to A. M. Mace, of Springfield, for Atmospheric-Gas Machine." This was the highest premium paid for any work of art, and but one other was awarded so high.

We copy the following paragraph from the editorial notice of this exhibition in the *Springfield Republican*, and it should be understood that the writer has been heretofore among the unbelievers. It was with difficulty, we were informed, that he was persuaded to go to see the light. But he went, and now hear him:

"A prominent object of interest in the hall, during the two days' exhibition, has been the atmospheric-gas light of A. M. Mace. It is known to our citizens that Mr. Mace has been making experiments, for the last two years, in the production of illuminating-gas from benzole. He has succeeded in inventing a machine that accomplishes his purposes very perfectly—a machine large enough to supply two burners, is easily portable, and can be placed upon any table. It is wound up like a clock, and will run three hours. These are driven by springs, while the larger machines are driven by weights. The fluid used is, 1st, water, which by its gravity remains at the bottom of the vessel employed; 2d, alcohol; and 3d, benzole, each, in order, lighter than the other. By the machinery, which is very ingeniously constructed, the air is forced into the water and rendered humid; then rising through the

alcohol, the humid air takes up the hydrogen, and passing through the benzole, as it leaves the vessel for the burner, it imbibes carbon, so that the gas consumed is carburetted hydrogen, borne in a large volume of air as a vehicle. * * * The experiment was a beautiful one, and, so far as we could judge, *entirely satisfactory*. The argand-burner exhibited, gave a light we have rarely seen surpassed."

With this gas, it has been estimated, by very careful experiments, that six mills will furnish a quantity of light equal to that produced by oil at a dollar a gallon, costing nineteen mills, in a common solar lamp. According to the estimate of Mr. Mace, as given by the editor of the *Republican*, three fourths of a cent an hour produces a light equal to a common solar lamp or a four-feet gas-burner.

There is a very marked peculiarity in this gas. It is well known that colors can not be accurately distinguished by the light of oil or of common gas. But with this gas there is no such difficulty. Nor will this be received with so much hesitation, when we also add, that with this gas a prism gives the colors of the solar spectrum. This is the highest possible recommendation of any artificial light. In fact, we are not aware that any other artificial light will bear this test.

We regard this, we have stated more than once, as one of the great discoveries of the age. Others have tried various plans, and with partial success. Those who have been most successful, obtained their results by *borrowing* from this patent, and without it we do not believe that success can be achieved, in any attempt at making each household independent in the manufacture of a good gas-light. So far, we believe in the correctness of the report of the committee of the gas companies, who visited Mr. Paine at Worcester years ago, who stated that they did not believe that air passing through a cold carbonaceous substance would be catalyzed so as to produce a good light. This patent secures this result admirably, and, so far as we have discovered, no other has proved successful in this respect.

The cost of these machines, capable of supplying ten fan-lights, will be within fifty dollars, and the care required in their management is a mere trifle. Those who have bought territories, we are informed, are making a very good business of it.

IRON AND ZINC MANUFACTURE OF SLAGS.

THE enormous quantities of scoria cast aside daily from the blast furnaces of the iron-works of the South-Wales coal-field are, it appears, about to be turned to good account by the ingenuity of Dr. Smith, of Philadelphia. This gentleman, with a staff of assistant chemists, has for some time been staying at Merthyr with a view of experimenting upon the blast-furnace scoria, with the object of producing therefrom a variety of articles in daily use, such as square tiles, paving flags, bottles, and utensils of domestic use. In converting the furnace cinder, Dr. Smith has been very successful. The bottles thus made are much tougher and the annealment is more perfect than in the common glass ones, from which, in their appearance, the new bottles can not be distinguished.

GWYNNE'S PUMP-WORKS, ATLANTIC DOCKS.

Few men have labored more in securing valuable improvements, in the various departments of mechanics, than Mr. Gwynne. There is no question that Mr. Gwynne's hydraulic pumps are among the most efficient means for elevating fluids. They have also great advantage over the more common pumps, in remaining a long time in perfect order. We have lately commended Mr. Carey's pumps. Between these two, those who wish for the most powerful action, at the least cost, are very hard to suit, if they will not be perfectly satisfied. We suppose that under different circumstances, one or the other of these may deserve the preference. But to give more particular information we append the following statement of facts.

At Mr. Gwynne's pump-works, Atlantic Docks, Brooklyn, we witnessed the operation of one of his small-sized drainage pumps, a six-inch discharge-pump, driven by a six-horse power engine, bringing the steam some three hundred feet, and filling a tank of over one thousand gallons in less than one minute, by our watch. As near as we could calculate, the water was raised twelve feet, affording a water-power sufficient to drive a large cotton or woollen mill.

Mr. G. believes, and exhibits experiments in proof of it, that with one of his large pumps he could have pumped the Arctic dry in twelve minutes. But we will allow him to speak for himself. He has lately sent out to parties interested in this subject, a circular containing the following statements:

"I take this method of laying before you a statement of what my apparatus can effect, and what I am prepared to do to insure its immediate adoption on all ocean steamships and steamboats carrying passengers. One of moderate size and cost, say:

2½	feet wide,	4	feet long,	weight 1 ton,	cost	$750,	will pump	50	barrels	per	minute.
4	"	6	"	" 3	"	$1500,	"	200	"	"	"
5	"	7	"	" 7½	"	$3000,	"	500	"	"	"

They can be made of a capacity to throw 2500 barrels per minute, and still be small in size, weight, and cost.

As a fire-engine, they would serve effectually to put out the most extensive fire that could occur on shipboard." He then adds as follows:

"I am prepared to build any size that may be ordered, (the three sizes above mentioned are on hand,) place it on board a barge, have a fair trial made of it, and if it fails to perform as stipulated, I will forfeit and pay to any charitable institution the price agreed for the engine; if it perform as agreed, the party ordering to receive and pay for it. I will give ample security to keep them in repair for twenty years, the owner paying me an annual sum equal to five per cent on its first cost. I will leave it optional to the proprietors of the ocean steamship first ordering two pumping-engines of 500 barrels per minute capacity, to pay for them or not after the pumps are in operation on their ship. I am induced to make this offer for two reasons—a desire to save human life, and to realize a large profit from my invention. Those who know me intimately will understand which inducement weighs most with me."

His references are among the most respectable gentlemen of New-York.

We append a description of this pump, with engravings of its different

parts. The same letters on different engravings refer to corresponding parts.

Fig. 1 is a top view. A is the stationary water-case or chamber, (bolted fast to the foundation-plate B,) in which the piston or disc rotates, motion

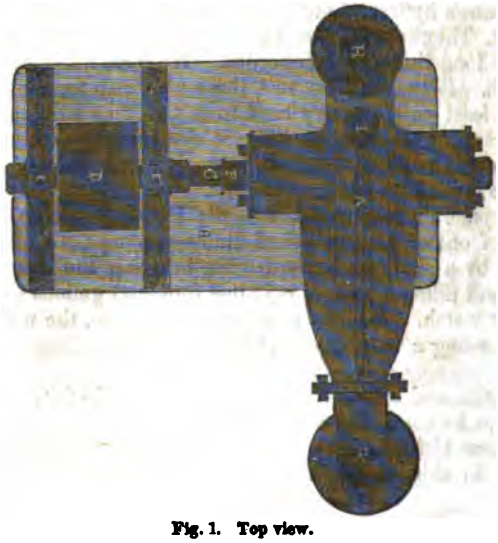


Fig. 1. Top view.

being given to it by the shaft C, on which is keyed fast the pulley or band-wheel D, and supported on its outer end by the standards or pedestals and

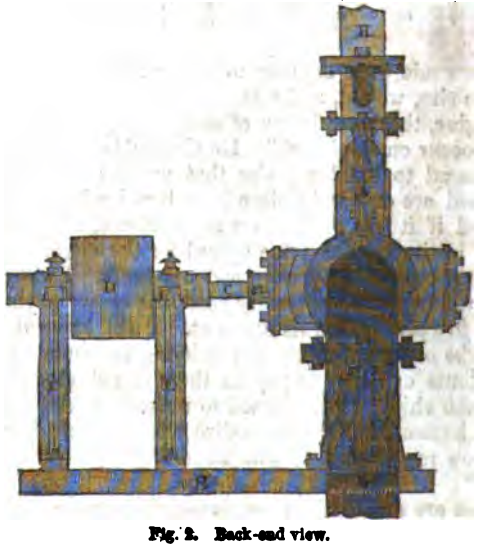


Fig. 2. Back-end view.

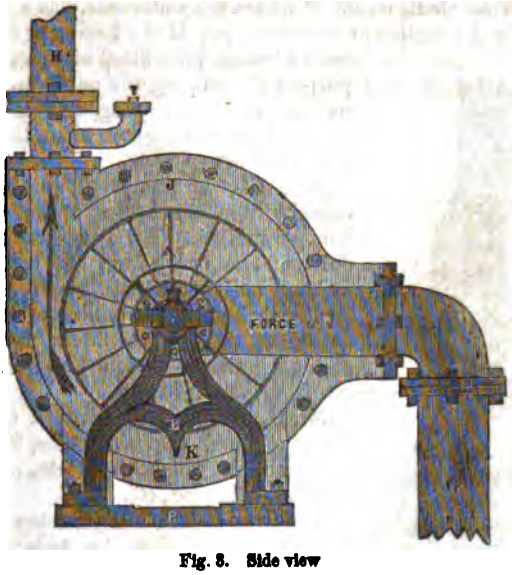


Fig. 3. Side view

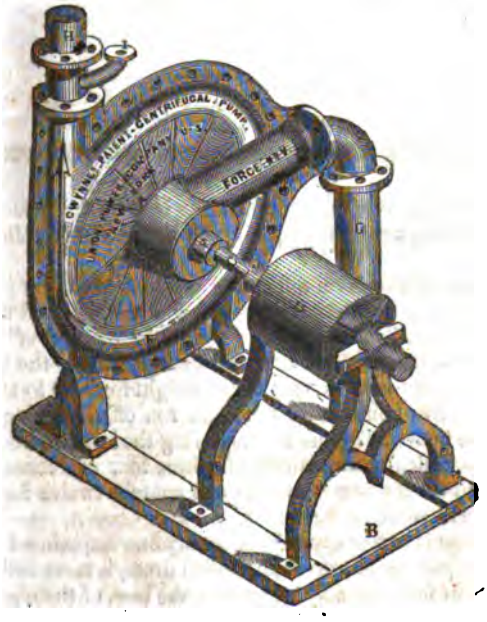
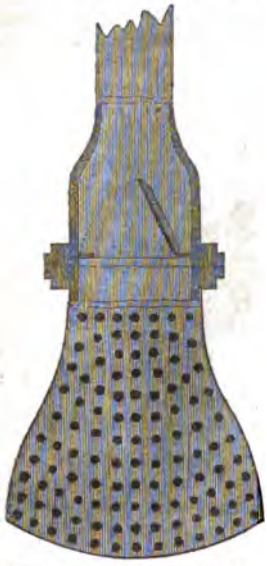


Fig. 4. Perspective view.

boxes EE. This shaft, where it enters the water-case, has a stuffing-box or gland, F. G is the suction or entrance-pipe; H the forcing or discharge-pipe; and I a branch-pipe, fitted with a screw-cap, for the purpose of charging the pump previous to starting it. J is a small plug, or vent-hole, and K a cock to let out the water when the pump is exposed to frost.



Foot of suction-pipe, with valve and strainer.

Nine sizes of pumps are made, varying, in capacity from twenty-five to four thousand gallons per minute. The diameters of cylinder, in different sizes, vary from one inch to eighteen inches; and of the suction-pipe, from two to twenty inches. The number of revolutions required to raise water fifteen feet high, from eighteen hundred to four hundred. The prices run from $30 to $2000.

Mr. G. has lately contrived a combination of his pump and a steam-engine, for purposes of irrigation, for canals, dry-docks, mines, quarries, factories, cities, etc., etc.

In different sizes, the diameters of the cylinders vary from four to twenty-four inches. Length of stroke from eight to eighteen inches; barrels of water raised per minute, from one to four hundred; prices, from $115 to $3000.

MANUFACTURE OF IRON BY THE RENTON PROCESS.

The Forest City Iron Works, manufacturing iron by the Renton process, says the *Cleveland Leader*, went into operation on the first day of July, 1854. The *Leader* remarks:

"After encountering a series of difficulties incident to all new projects, the new principle was put to a final test last Saturday afternoon, and the result was a complete vindication of the sagacity of the projectors and of the skill of Mr. Renton. We had the pleasure of being present during the trial. In a period of three hours, six blooms, varying in weight from 60 to 161 pounds were run off. Within five hours 1188 lbs. were run off, averaging per hour during the first three hours 227 pounds, and during the last two hours 303 pounds. There will be no difficulty in running off three tons of blooms per day, from each furnace, and as the present works will contain twelve furnaces, the product each day, will be about forty tons.

The new process is extremely simple to any one acquainted with the qualities of iron. The portion of ore usually called dross, is more easily melted than the iron; and this fact probably suggested the idea of the new process to Mr. Renton. By reducing the ore to about the consistency of coarse sand, and subjecting it to a heat sufficient to cause the particles of iron to cement, and the dross is melted and thus separated from the iron which is taken out in masses, called balls, and beaten into blooms. The hammer weighs nearly

10,000 pounds, and the ore-crusher possesses such vast power that fifteen tons can be crushed in sixty minutes.

Several scientific gentlemen were present during the trial, among them Mr. Foljambe, Mr. Renton, Mr. Houston, who is erecting iron works on the same principle, and a gentlemen from Boston, eminent in the literary world. All were perfectly satisfied in regard to the result.

MISCELLANEOUS.

PHOTOGRAPHY: WAX-PAPER PROCESS.—At a recent meeting of the London Photographic Society, a paper was read by Mr. Townsend, giving the results of a series of experiments instituted by him in reference to the wax-paper process. One of the great objections hitherto made to this process has been its slowness, as compared with the original Calotype process, and its various modifications; and another, that its preparation involved some complexity of manipulation. Mr. Townsend has simplified the process materially, having found that the use of the fluoride and cyanide of potassium, as directed by Le Gray, in no way adds to the efficiency of the process, either in accelerating or otherwise. The iodide and bromide of potassium with free iodine give a paper which produces rapid, sure, and clean results. He discards whey, sugar of milk, grape-sugar, etc., hitherto deemed essential, but which his experience shows to be unnecessary. He exhibited three negatives of the same view, taken consecutively at eight o'clock in the morning, with the respective exposures of thirty seconds, two and a half minutes, and ten minutes, each of which was good and perfect. The formula he adopts is:

Iodide of potassium,	600 grs.
Bromide of potassium,	from 150 to 250 "
Re-sublimed iodine,	6 "
Distilled water,	40 oz.

The waxed papers are wholly immersed in this solution, and left to soak at least two hours, and are then hung to dry in the usual way. The papers are made sensitive by wholly immersing them in aceto-nitrate of silver of the following proportions:

Nitrate of silver,	30 grs.
Acetic acid,	30 minims.
Distilled water,	1 oz.

the papers remaining in this solution not less than eight minutes. They are washed in two waters for eight minutes each, and then blotted off in the ordinary manner. Mr. Townsend states that there is no need to fear leaving the paper in the sensitive bath too long. He has left it in the bath fourteen hours without any injury. The paper thus prepared will keep ten or twelve days; it may be longer, but his experience does not extend beyond that time. With paper thus prepared, a portrait was exhibited, taken in fifty-five seconds, in a room with a side light, but it must be added that in this instance the paper was not washed, but was blotted off immediately on its leaving the sensitive bath, though not used until two hours had elapsed. Mr. Townsend uses, for developing, a saturated solution of gallic acid, with a dram of aceto-nitrate to every four ounces of it, but he considers that this proportion of

aceto-nitrate may be beneficially lessened. He finds that by this process he is certain of success, and is never troubled with that browning over of the paper which so often attends the use of the other methods of preparation. Beside the rapidity of action which he states, there is the further advantage that a lengthened exposure is not injurious. The proportion of bromide may vary from 150 grs. to 250 grs.; less than 150 is not sufficient to produce a maximum of rapidity, whilst more than 250 adds nothing to the effect.

Impression by heat, or Thermotypy.—This process proposed by M. Abate is very simple, and is based on the destructive action exerted by chlorhydric acid on organic substances. Suppose for example we have a slice of wood of which we wish a faithful impression. The wood is exposed for some minutes, to the action of cold vapors of chlorhydric or sulphuric acid, or it is wet lightly with either of these acids diluted. The slice of wood, wiped with care, is placed on a piece of paper, cotton cloth, or white wood, in a press, and a blow struck. The impression is at first invisible; but on exposing it to a strong heat, it gradually appears, and exhibits a perfect picture of the wood. This operation may be repeated indefinitely, For oak, maple, hazel, etc., the picture is of the color of the wood; but for mahogany, rose wood and many others, the color is modified, and if a perfect colored picture is desired, it should be taken on a previously prepared tint of the required kind.

It occurs to us that, by taking an impression on a plate of zinc, tin, marble, or other substance attacked by acids, a negative relief might be obtained, which would serve for reproducing pictures of the impressions. Finally, if the image of M. Abate is obtained with a substance which is a conductor of electricity, it may then be reproduced by electrotypy.

Verd Antique Marble.—The papers state that the New City Hall of New-York is to be built of Verd Antique or Serpentine marble, either from Vermont or the quarries of Milford, Connecticut. The latter is a miserable material for all out-door use, though elegant for in-door purposes. When the Milford quarries were first opened some 35 to 40 years since, the polished slabs were used as monuments in the New Haven-Cemetery; and now they are as gray and rough as if remnants of Assyrian antiquity. The Vermont material is more purely a serpentine rock, and will not wear as unevenly. But unpolished, it is a dull, blackish, gloomy stone, turning brownish gray on exposure, and fit only for a prison. It is quite time that in the selection of building material for public structures in the United States, some reference should be had to the quality and fitness of the rock. The Greeks were wise in using material which 2000 years have not wasted nor diminished in beauty.—*Ex.*

Silexian Marble.—This is a new and most valuable composition, and is said to contain some properties superior to the best qualities of marble, sustaining heat, without injury, to a greater extent than marble. It is not injured by oil or grease, is readily cleansed with water, and restored to a fine polish by rubbing with a soft cloth. It is much superior to Scagliola, as it contains no animal or vegetable substances, as glue or paste, consequently is not injured by moisture; and as the coloring is through the whole mass, it is not possible for the surface to peel off, as enamelled iron, but will sustain its original appearance for ages.

Any article that can be formed of stone is readily made of this composition, and many of them at less than one half the cost of similar articles made of marble.

Persons desirous of examining this marble, may be gratified by calling at No. 698 Broadway.

GAS-TAR IN HORTICULTURE.—A discovery which is likely to be of great advantage to agriculture, has just been reported to the Agricultural Society at Clermont, (Oise.) A gardener, whose frames and hot-house required painting, decided on making them black, as likely to attract the heat better, and from a principle of economy he made use of gas-tar instead of black paint. The work was performed during the winter, and on the approach of spring the gardener was surprised to find that all the spiders and insects which usually infested his hot-house had disappeared, and also that a vine which for the last two years had so fallen off that he had intended to replace it by another, had acquired fresh force and vigor, and gave every sign of producing a large crop of grapes. He afterward used the same substance to the posts and trellis-works which supported the trees in the open air, and met with the same result, all the caterpillars and other insects completely disappearing. It is said that similar experiments have been made in some of the vineyards of the Gironde, with similar results.—*Galignani's Messenger.*

GUANO FOR THE SUGAR-CANE.—The *New-Orleans Delta* contains the particulars of some experiments with guano on the sugar-cane. The guanoed part "turned out the largest and heaviest canes in the field, and produced of first and second clarified sugars 2500 pounds per arpent." The same ground had never before produced "more than 1000 pounds per arpent." With guano, the experimentor is convinced no rotation of crop is required to produce the finest and heaviest canes in Louisiana. Another planter who had used guano, says he "never saw a heavier stand and higher canes in this State than the guano canes." From the great increase obtained from the application of ammoniacal manures to wheat and other cereal grains, we have long been satisfied that they would prove equally beneficial to the cereal sugar-cane, while from the large quantity of cane obtained per acre, and the comparatively high price of the sugar, they would afford a profit which wheat-growers could not hope for.—*Rural New-Yorker.*

PACIFIC MILL AT LAWRENCE, THE LARGEST IN THE WORLD.—The largest and most comprehensive mill in the world is the Pacific, at Lawrence. It makes none but the finest kinds of goods, and the success of its operations is looked to with great interest by manufacturers. The floor surface of this immense structure is sixteen acres; the largest mill in England is eleven and a half acres. There are now in operation 40,000 cotton spindles and 10,000 worsted spindles, and these are to be increased to 80,000 and 20,000 respectively. There are 1200 looms in operation. to be increased to 2400. These, with two thousand hands, produce 300,000 pieces of cloth per annum, one half de laines. The weekly consumption of cotton is 20,000 pounds, say 1,500,000 per annum, and 500,000 pounds of wool. Once a month, the two thousand hands assemble at the cashier's office, where Mr. Clapp pays out to them $500,000 for wages, appropriating to each one the exact amount she has earned.—*Lowell Journal.*

COAL IN INDIANA.—For several months past, a Mr. Kerstman has been boring for coal at Evansville, Ind., being fully satisfied by geological investigations that the town must be upon an immense bed of that mineral. He has at length been successful in reaching a large vein of coal, which he says is so satisfactory in its character that he is about to commence sinking a shaft, which will penetrate the vein about the 1st of December. In two or three years, he expects to be able to dig and deliver coal, right in the heart of the town, at the rate of twenty thousand bushels a day, if desired. Pre-

vious to undertaking his experiments, he obtained from the city government the right to run a tunnel, with a railroad track under any of the streets, as the depth of two hundred and fifty feet below the city, promising by thit means to deliver coal in the city at the same price at which it can be sold at the principal shaft.

GROWING FISH.—The *Cleveland* (O.) *City Fact* says that one of the most pleasing things exhibited at their late County Fair was a lot of brook-trout artificially bred by Drs. Garlick and Ackley, whose labors in this line we have heretofore noticed. They showed several broods of fish in different stages of growth, and have demonstrated that it is just as easy to grow fish as it is fowls, or any other description of food.

PLASTER AND GUANO FOR COTTON.—A gentleman in Orangeburg, S. C., writes: "In 1853, I made the following experiment, with guano and plaster, on sixty acres of land: 100 pounds of guano, and 50 pounds of gypsum per acre; cost, $3; total, $180. The increased production was 100 pounds of clean cotton to the acre, or 6000 at 9 cents net per pound, or $540 with a profit of $360."

THE *Knife-Grinder* has certainly been to Toledo and sharpened up the *Blade*. Read:

"THE DIFFERENCE.—A correspondent asks, What is the difference between a crop of corn in the field and a crop of corn in a hen?

Not much difference this year, we should guess. The crop in either amounts to only a few *pecks*."—*Cleveland Weekly Leader*.

Certainly. We shouldn't like to be obliged to *handle* that blade.

NEW PRINTING-PRESS.—Mr. Stephen Brown, a journeyman printer, of Syracuse, N. Y., has invented a new printing-press. The *Standard* says of it:

"By the model exhibited to us, a job in four colors can be worked at the rate of five hundred copies per hour, and in elegant style. One impression only is given for the whole form—the colors being given by different rollers, and the impression taken at once. Strange as it may seem, one letter can by this press be printed in one, two, three, or four colors, if desired; the body of the letter may be black, red, or blue, and the outside shaded with an entirely different color. As a press for printing in colors, the new invention is the most perfect ever exhibited in this country, and must effect a revolution in that branch of the printing business.

As a general press, it is quite as good, if not better than the Adams. In our opinion, it possesses several advantages over that press, even for book work, general jobbing, or newspaper work."

ANOTHER FAST PRINTING-PRESS.—The following seems to excel all inventions heretofore put in operation:

"Wilkinson's Cylindrical Rotary Press prints simultaneously from a roll of paper both sides of a newspaper, delivering the papers cut and ready for folding. The press is of the most simple construction, and very compact. It is not over eight feet in length by four in breadth and five in height. A secure frame-work supports two pairs of cylinders, each about eighteen inches in diameter. Upon one of these cylinders are the types that print one side of the paper, and upon the other those that print the reverse, the printing cylinder which gives the impression being below in the one pair, and above in the other. A roll of printing paper is suspended on an iron rod or axle on one end of the frame-work on a level with the cylinders, and but a foot or

two removed from the nearest one. And this with the inking-rolls and the cutting apparatus, constitutes all the machinery.

The process of printing is commenced by taking the end of the paper from the roll and drawing it through the press on a nearly horizontal line, passing it over one cylinder and under the other. The power is then applied, and the cylinders revolve, causing a corresponding revolution of the roll of paper which is thus passed between the cylinders, receiving its impressions on either side as it goes. As it passes out at the other end of the machine, it is cut off at regular intervals, and the separate sheets fall regularly into a pile. The cutting apparatus is of admirable simplicity and beauty, and cuts wet paper as infallibly as dry.

It will be seen from this description how remarkably simple is this machine. There is no backward or 'reciprocating motion,' as the mechanics term it, nothing but a simple forward revolution of the type and printing cylinders. The speed at which these cylinders may be made to revolve, would seem to be only limited by the rate at which the paper may be made to unwind from the roll, and this is obviously very great.

At the experimental trial observed by us, the papers were thrown off at the rate of seventy-five per minute. This number we judged could be easily doubled, and it was the opinion of the inventor, that it could be quadrupled without difficulty. If so, the machine will print eighteen thousand newspapers per hour, which is something more than double the capacity of our great press, which is not, we believe, surpassed by any newspaper press now running."

Vermont Marble.—We are authorized to say that the "American Verd Antique Marble Company" has made a contract with the United States government for a large quantity of the Roxbury (Vt.) Verd Antique Marble, to be used in the interior of the new Capitol at Washington for ornamental purposes, in the form of columns, pilasters, panels, etc., to be mingled with white marble. Vermont can furnish superior white marble also. Can't some of the smart boys on the west side of the mountain get a contract? In anticipation of a demand for their beautiful marble, the people of Roxbury have done a great deal the past year in building and other improvements, and we are glad that their expectations are in so fair a way of being realized. —*Vt. Watchman.*

Vermont Machinery for England.—We noticed the other day, at the manufactory of the Robbins & Lawrence Company in this village, a beautiful lot of about thirty machines, just completed and about to be shipped for England, to be used there in the manufacture of government arms. They are the first lot completed on a large order, (amounting, we believe, to about $100,000) recently giving by the government agent, after inspecting the work of different establishments. This machinery is procured, we understand, for the purpose of introducing the American process, by which the parts to the different guns are made uniform and interchangeable.—*Windsor Journal.*

The Mosquito.—We cut the following from an exchange in which it is appended to a description of some experiments in raising mosquitoes:

"The development of the mosquito is a curious process. In the first place the egg becomes what is called the 'water-tiger' that devours the smaller animalculæ with insatiable appetite.

In a spectrum of a drop of water, projected from a hydro-oxygen microscope we have seen the shadow of one of these water fiends swallow the

shadows of a dozen smaller imps—the larvæ of midges and such 'smaller deer'—in less than three minutes.

In due time a change comes over the monster. Nature envelops it in a pellicle, or semi-transparent shroud, from which all the antennæ of the mosquito stick out at one end and its tail at the other.

Finally the creature rises to the surface, the caul bursts, and out flies the insect like an internal illustration of the fable of Psyche. In five days the machinery of its existence, which is wound up to go for that time and no longer, runs down. Such is the biography of the mosquito."

Fat Turkeys.—If you would have good fat turkeys for Christmas, feed them liberally with charcoal-dust. If you don't believe it, try it, and if it fails send us the turkeys.

Illustrated Magazine of Art, and Dickens' Household Words, have been disposed of by Mr. McElrath to Mr. J. A. Dix, of this city, who will publish the latter regularly on every Thursday. The *Illustrated Magazine* is still monthly.

When we had an opportunity of seeing these publications, we used to find them worthy of attention, and noticed them as such. Recently, and for months, we have not seen a copy of either, and hence know nothing about them.

AMERICAN PATENTS.

Engraving and Painting on Glass.—A very important invention has been recently achieved by Mr. Whipple, of Boston, who proposes to transfer, print, or engrave on glass, by purely mechanical means, any device, scroll, landscape, or even shaded portrait, with all the fidelity of a wood engraving, and this with a rapidity and cheapness heretofore undreamt of. The present mode of engraving figures upon glass, by grinding upon a wheel, requires much time and skillful workmen, and while absolutely precluding the production of other than heavy and straight, or, slightly curved lines, renders nearly impracticable any very close imitation of the pattern or copy. The new process, on the contrary, guarantees that each piece operated upon shall be an exact copy of the preceding one, insures an unprecedented degree of perfection in every detail, renders practicable the execution of fine lines, shades, and points, and, while requiring no unusual perfection of form, actually dispenses with the extravagant thickness of glass hitherto required in articles to be engraved upon, as well as figures, with nearly equal facility on perfectly plain or uneven sheets of plate-glass, cylindrical or conical drinking vessels, globular or irregular-shaped lamp-shades, and, in fact, in any of the usual forms in which vitreous material is applied to useful or ornamental purposes.

The most remarkable point, in connection with the machine, is its extreme simplicity; it is of small size, and may be carried in one hand, with all its appurtenances, including a pulley for driving it by steam or water-power. Three full-sized machines have already been constructed, and others are in progress, it being designed to enter immediately on the manufacture and sale, on a large scale, of glass thus ornamented. It is estimated that one girl can attend to four machines, and that each of the four will engrave a goblet, or

other small article, in from three to ten minutes, thus affording a rapidity of execution and diminution of expense which, among other things, may render the use of glass, engraved with the name, seal, motto, or favorite device of the owner, as common as that of plain glass now is. The metallic pattern, used in this process, is prepared by competent artists, at a moderate expense, and apparently retains all its original clearness and sharpness after the production of an immense number of ornamented articles. In brief, this method, which has just been patented in almost all civilized countries, must be acknowledged to execute what it has before been considered impossible to perform, with a degree of accuracy approaching absolute perfection—to execute work with a rapidity corresponding to the demands of this "fast" age, and, considering the diminished thickness of the material, and the female hands employed, to work with a cheapness sufficient to warrant a hope of its becoming an art of considerable importance.

Improved Printing-Press. *By Ervin B. Tripp*, 272 Greenwich street, N. Y.—This improvement consists in the combination of the principles of the platen with the cylinder movements. It is generally conceded that an impression from types is best received by the reciprocating motion obtained by pressure between two flat surfaces, but heretofore the objections to the platen press has been made because of its slow motion. The object of this improvement is to quicken the operation, by a direct application of power, and then to facilitate the labor of feeding the sheets, inking the form, etc., that no time may be lost. The sheets are fed into the press by means of a cylinder and detached reciprocating nipper-bar, thus obviating the necessity of *lifting* the sheet to be printed from one feed-table to another. A fly-frisket attached to the sliding tympan throws off the printed sheet. The press is so constructed as to obviate the necessity of complicated machinery, which lessens very materially the cost of construction. Patented October 3, 1854.

This press is being built to all sizes, and particulars can be ascertained on application to the patentee.

Cutting Wood-Screws.—A very useful machine has been invented for making wood-screws, by Messrs. George F. Wilson, of Providence, and James M. Wiley, of Olneysville, R. I., which, although not yet in constant operation, bids fair to surpass others now in use in this manufacture. The machines employed at Providence, to which place this branch of business has heretofore been almost exclusively confined, cut about seven or eight screws per minute; while that of Messrs. Wilson and Wiley, which is considerably larger and heavier, is found capable of producing thirty-two screws in the same time. The machine, in fact, may be considered in one sense as a quadruple machine, there being four places for the reception of the blanks, four places from which screws are dropped when finished, and four screws in process of being cut at or about the same moment. The machine is very much simplified, and the durability of the cutting tools is much enhanced by this invention, the thread of each screw being formed by a series of eight cutters instead of one.

The manufacture of a wood-screw requires three distinct operations. The wire must be cut into lengths, and a blank, with a smooth conical head, and a plain cylindrical shank, must be formed out of each length. The head must afterward be sawn across, to allow of the action of a screw-driver, and the shank must be transformed, for perhaps half its length, into a smooth and sharply-threaded screw. This operation is performed entirely by remov-

ing the metal between the threads, and is the only process worthy of much attention. The usual plan is to fix the blank by the head in a species of lathe, and cause it to revolve rapidly, while a tool, pointed to a sufficient angle to form the desired thread, is pressed upon it from one side, and moved longitudinally with such speed as will afford the proper pitch. As a thread can not, however, be cut to a sufficient depth at one operation, the same tool is repeatedly traversed backward and forward, requiring much complex mechanism, and subjecting the single tool to a very considerable amount of abrasion. In the new machine this reciprocating movement is entirely dispensed with, four series of tools, which are substituted for the single one, being carried on a slowly-revolving wheel. The blank is fed up by machinery, caught by tongs, and made to rotate. A rest is next pressed up on one side to steady the blank, while the other side is traversed by eight cutters, following each other in regular succession, each deepening the groove made by its predecessor, until the last leaves the thread complete, whereupon the screw is dropped. This series of cutters moves steadily onward, to engage with the next blank; while another blank is brought forward from the feeder, the side-rest again comes into action, and the next series of cutters follow each other along the surface of the metal. The cutters are not rigidly fixed to the slow horizontal wheel, but are so connected to it as to be pressed forward by a cam into the proper degree of contact with each blank, the screws being of uniform diameter, or tapering to any extent desired, according to the form of the cams employed. The patent was issued from the U. S. Office in April last, the invention having been also patented in Great Britain, France, and other countries. The rotatory wood-screw machine, complete, stands about four feet high, and covers an area of about four feet square.

Calcium Light.—Mr. Robert Grant, of New-York, has been for several years endeavoring to perfect the Calcium Light as an illuminator for light-houses; and some recent experiments on the Latting Tower would seem to indicate some prospect, at least, of *brilliant* success. The Latting Tower is a public observatory, erected in the upper part of the city, the top being just 300 feet above the earth. A full-sided apparatus was placed on the summit a few weeks since, and the shadow projected by its most intense flashes, at the distance of eleven miles, was judged to be equal to that from the moon in its first quarter. The light is thrown from the focus of a large parabolic reflector in one pencil of rays, which is made to travel round the horizon once in seven seconds. This light is made to repeat any required number of occultations in the following manner: To give the number twenty-one, the reflector is turned twice with the light burning; then the light is put out, excepting a small point of hydrogen, and the reflector turned three times; the light is then increased again by the same machinery, and turned once; lastly, the light is suppressed during five revolutions. Any other number can be made by simply changing a cam-wheel. The cost of producing a light of this intensity is represented by Mr. Grant as being half the sum required for a first-class Fresnel light. The lime-point employed in this modification of the oxhydrogen light, is said to burn or rather to glow with intense brilliancy for twenty-four hours without disintegrating.

Gas-Heating Apparatus. By Charles M. Guild, Brooklyn, N.Y.—The nature of this invention consists in so constructing the heating apparatus, as that the weight of the thing to be heated, or the act of placing the article to be heated thereon, shall open the valve to admit the gas to the burner, and the removing of the article therefrom close the valve. And also in the

small perforation leading from the gas-pipe to the burner, for the purpose of admitting a jet of gas to the burner, barely sufficient to keep up the flame without unnecessary wasting of the gas, when the apparatus is not in actual heating use, or when one article is removed, and before another is replaced thereon, and by which means the re-lighting of the apparatus is avoided.

Improved Sawing-Machine. By Chas. F. Packard, Greenwich, Ct.—This invention relates to a new and improved sawing-machine, for sawing laths, pickets, etc., direct from the log, and consists in the employment or use of a vertical saw, or a vertical reciprocating saw, and a series of horizontal circular saws, being placed on one shaft at a suitable distance apart; said shaft being attached to a vibrating frame operated in a peculiar manner, the horizontal saws will be thrown outward from the carriage and log, when the carriage and log are moved in one direction, and thrown in toward the carriage and log, when the same are moved in the opposite direction.

When the horizontal saws are thrown in toward the log, they cut into the log the distance the width of the laths, pickets, or other article to be sawed from the log are intended to be, and when the horizontal saws are thrown from the log upon the return-motion of the carriage, the circular saw cuts the laths, etc., from the log.

Improvement in Self-acting Mules for Spinning. By Geo. Wright, New-England Village, Mass.—The nature of this invention consists in transmitting the power which actuates the mule in its in-and-out motions through cone-pulleys, in combination with some means of automatically shifting the band upon the cones, by which means a great saving of machinery is effected, and I am enabled to give to the carriage a varying velocity, suited to the requirements of the different parts of its traverse.

My invention, furthermore, consists in backing off the yarn at the moment the spindles are stript, by means of a friction-clutch and stationary band, which are brought into action by the rising of the stripping, and operated by the last motion of the carriage as it takes out. And it also consists in winding on the yarn as the carriage takes in by means of the aforesaid clutch and cord, which clutch is regulated in its bite by the tension of the yarns, so that when the strain upon the latter becomes too great, the under-fallen wind is depressed, thereby opening the clutch and permitting the cord which drives the spindle to slip, and thus regulating the degree of tightness with which the yarn is wound.

Improvement in Machines for Pegging Boots and Shoes. By A. G. Gallahue, New-York.—This invention relates to certain new and useful improvements in machines for pegging boots and shoes, and consists in the employment of a rocking bed-plate, on which the boot or shoe is placed or attached, said bed-plate being attached to a carriage by pivots and governed by a spring, by which the edge of the sole of the boot is made to bear against the gauge-block, and cause the pegs to be driven into the sole at an equal distance from its edge.

ENGLISH PATENTS.

SELF AIR-HEATING BLAST-FURNACE. By WRIGHT & BROWN, Newcastle-on-Tyne.—This important modification of the hot-blast smelting furnace promises to effect a very great economical change in the iron manufacture. It is applicable as well in the primary process of reducing the metal from the crude ore, as in the re-melting and converting operations of the manufacturing founder. Instead of blowing the air right into the melting contents of the furnace or cupola, either in a cold state, or heated by passing through a separate heating apparatus, the furnace, or melting-chamber, is formed so that it may act as the heater for its own blast. For this end, the lower portion of the furnace is formed with receiving-chambers, so contrived that they may hold a mass of melted metal, as descended from the body of the furnace above, and thus act as the heating surface for the cold air supply. Thus, the external cold air is first blown into these chambers, and, being there heated, it passes off into actual contact with the melting mass of material under treatment.

As applied in the construction of smelting or blast furnaces, the cold air is first blown into the lower part of the body of the furnace, and it is then passed into heating chambers, formed in the bottom and sides of the furnace body. It is subsequently conveyed into the furnace at a level slightly above that of the blast-hole, and it is there made to pass through the coke and metal with which the furnace is charged.

STEAM-ENGINES AND BOILERS FOR SCREW PROPULSION. J. E. M'CONNELL, Patentee, Wolverton.—This is one of the latest of Mr. M'Connell's many improvements in steam machinery; and although we here represent the arrangements as especially contrived for a screw steamship, yet the general features of the plan are applicable for all marine purposes, the objects aimed at being superior compactness of construction and economy of cost, while the working efficiency is wholly improved.

The new plan of boiler resembles that previously patented by Mr. M'Connell, and now in use for locomotive purposes, the fire-box being considerably extended into the boiler's barrel. When arranged for marine purposes, a set of cross partitions are introduced into the water-space above the fire-box, for the purpose of preventing the rolling of the ship from sending all the boiler-water into any particular part of the boiler. By this modification, the water in the boiler is constantly kept well diffused or spread over the available heating surface; and for the prevention of deposit and incrustation, vessels which can be detached at pleasure, of suitable form, are placed under the barrels of the boilers to receive the deposited or precipitated matter from the water, or this deposit can be withdrawn by a blow-off cock, or by other suitable means; separate or additional fire-doors are also introduced into the boilers beneath the fire-boxes, through the water-spaces, for the admission of atmospheric air to render the combustion more complete. In arranging the engines themselves, the steam-cylinders are disposed diagonally athwart the ship, and at or about a right angle to each other; that is to say, with their axes transversely as regards the keel-line, so as to suit well for actuating the screw propeller shaft laid in this line. They are connected to the stern ends of the boilers, which are also laid in the direction of the keel-line, and the connecting-rods of the pistons proceed direct to the crank on the screw-shaft.

An improved expansive motion is also adopted for working the valves, cutting the steam off at any required part of the stroke, either by having one slide-valve placed in the centre of the cylinder, as commonly used in locomotive-engines, or by having a slide-valve at each end of the cylinder, thereby greatly facilitating the working of the engine, as well as considerably reducing the consumption of fuel. The steam-pipe or pipes from the boiler are taken through the flame-chamber or smoke-box, for the purpose of drying or surcharging the steam with an additional quantity of heat, previous to its admission into the cylinder, consequently preventing, to a great extent, the condensation which takes place from the exposure of the steam-pipes. The feed-water may be conducted through pipes or vessels placed in the flame-chamber or smoke-box, where it is heated, either by being forced in jets upon the exhaust-pipe, or by admitting the steam in jets on the surface of the water. The steam-pipes bringing the steam from the boiler, are so arranged as to allow of any one or more of the boilers being worked separately at pleasure. The engine-framing is also so contrived, that the cylinders and machinery are held securely in their proper positions, all chance of derangement from the motion of the vessel in stormy weather being avoided, and the cylinders and boilers are cased over to prevent the occurrence of objectionable condensation from undue exposure to the atmospheric action. The screw propeller shaft is made hollow or tubular, so as to combine great strength with lightness; such shafts are made according to the process used in the manufacture of the patentee's hollow axles and shafting. By the adoption of the present improvements, coke or anthracite coal may be employed in the furnaces, and steamships will be enabled to carry enough fuel to supply them for a longer period than at present. The steam is also to be surcharged with heat for the purpose of satisfactorily drying it prior to its entering the cylinders, so that "priming" may be prevented; the feed-water for the boilers is also heated and purified, so as to enable it to absorb all the available heat given out from the fuel before the waste reaches the funnel.

Direct-Action Oscillating Engines. By Neilson & Co., Glasgow.—The following is a description of an arrangement of direct-acting engines for screw-propulsion, lately introduced by Messrs. Neilson & Co., and possessing great compactness as well as other practical advantages. There is a side and an end elevation of the engines, which are of the inverted oscillating cylinder class, the two cylinders of which the engines consist being disposed fore and aft in the keel-line of the vessel. These cylinders are arranged to work upon horizontal central trunnions, carried by vertical standards springing from a solid rectangular base frame; the two inner or contiguous trunnions, that is, one of each cylinder, being carried by pedestal bearings set on the opposite sides of a central or intermediate standard, while each outer trunnion has a separate standard of its own. The actuating steam is brought to the two cylinders by pipes opening into the external trunnions, which are hollow for the purpose. After entering the trunnion, the steam passes right and left through a steam-jacket surrounding the cylinder, and thus reaches two separate external slide-valve chests, with which each cylinder is fitted, set on the cylinder a little on each side of the axial line of the trunnions, and at an angle therewith, being about one third of the cylinder's circumference apart. Each slide-valve admits steam to, and exhausts it from, one end of the cylinder, which, by this arrangement, is well balanced as to dead weight in its working action. The exhausted steam passes from these two valve-chests (in each case) to the inner trunnion, and thence into the upper portion of the central

standard, the lower portion of which acts as the condenser. Each cylinder has two eccentrics for the back and forward motion. These eccentrics are fast upon the screw or crank-shaft in the usual way, and their rods work upward, carrying the usual curved expansion link. The slot of the curved link has fitted into it the stud-pin, on the lower end of an open vertical frame-piece, working in guide-eyes fast to the side of the central condenser standard. The upper cross-bar of this frame is formed with a curved slot, to receive the stud-pins of a pair of reversed rocking-levers, one for each slide-valve. In this way, the eccentric action is accurately conveyed to both valves to give a simultaneous traverse.

The pendant piston-rods, of course, pass directly to the two cranks on the propeller-shaft, which runs astern, through central openings in the standards. The same base-frame carries the two vertical air-pumps, the rods of which work up through the upper pump-covers, each rod having a cross-head running fore and aft, and having at each end an eye for connection to the vertical plunger of a cold-water or bilge-pump, which duplex pump-movement in each case answers as the air-pump guide. The air-pumps are placed, one on each side of the central standard, from the lower hollow portion of which they take up the water of condensation, and discharge it out through elevated hot wells, one on each side. The two air-pumps are worked from one central crank on the screw-shaft, two connecting rods being passed up diagonally, one to each of a pair of levers, set with their inner ends on studs carried by the central standard, while their outer ends are linked to the air-pump rods. Suitable openings are formed in the central standard, to allow of the working vibration of these levers.

The great simplicity of this arrangement of engines, combined with the direct connection of the main working parts, admits of their being run at a great velocity, without injurious vibration or liability to derangement.

Printing Surfaces. J. B. Graham, Glasgow. *Patent dated February* 6, 1854.—This important invention opens up an entirely new path in the production of ornamental designs for block or surface roller printing, for textile and other goods, as well as for various other purposes.

According to this system, the printing surface is derived from a matrix consisting of a compound or built-up surface or mass of pins or type. The pins or type, composing this built-up matrix, are of any suitable section, capable of being firmly and regularly bound up together into one mass. A collection of such pins, each being of exactly the same length, is bound up into a uniform mass, the ends of the whole series being coïncident, or in one plane. The operator, then having his pattern or figure previously drawn, depresses such of the pins as are intended to print, or are intended to correspond to the impression surface. He thus produces the intended figure in *intaglio;* the pins left standing at their primary level, corresponding to the ground or surface not intended to print. A cast is then taken from this matrix, in gutta-percha, type-metal, or other material, to form the printing surface. As all the pins are of the same length, it is obvious that the pins pushed down or depressed at one end or face, appear prominent at the reverse face; hence the operator has the power of making reverse or counterpart printing surfaces simultaneously, the two being in exact correspondence with each other. If desired, the actual pin surfaces themselves might be used as the printing medium. Printing surfaces, so produced, may be employed either as blocks or as surface rollers; and they may be used as *intaglio* printing surfaces, by arranging them to print from the sunk parts, just as in cylinder printing.

GRAIN MILLS. J. H. JOHNSON, Lincoln's-Inn-Fields, and Glasgow. *Patent dated October* 22, 1853.—Several improvements in mill machinery are comprehended in this invention, which has been patented in this country on behalf of MM. Froment & Son, of Chartres, France. The chief improvement relates to the mode of driving the millstones. A number of pairs of stones are arranged in a ring, and are all driven by one large horizontal pulley, acting frictionally, and set in the central space between the millstones. This large pulley actuates small pulleys upon intermediate shafts, carrying pinions in gear with spur-wheels on the spindles of the several millstones.

FOUNDATIONS OF HOUSES. G. BIRD, Glasgow. *Patent dated February* 11, 1854.—Mr. Bird here provides a means of obtaining secure, dry, and impermeable substructures or foundations in buildings of various kinds, by the use or application of asphalte, or asphaltic compositions. When the foundation trenches are prepared, the bottom is laid with a mixture of asphalte, or asphaltic composition, and broken stone, slag, shingle, or other similar materials. A satisfactory mode of laying such a substructure, is that of first making the substratum perfectly solid, which may be done by ramming the ground firm, or by the modes commonly adopted where the ground is very soft, and then depositing a layer of the stone or slag, of from four to six inches thick, in the bottom, and afterward pouring the melted asphalte through this layer. This compound layer becomes perfectly solid when cool, binding together in one mass the whole of the foundation, and furnishing a strong support to the superstructure. . The two materials may be thus alternated, until a sufficient thickness of substructure is obtained. This foundation effectually precludes the upward striking of damp, or the burrowing of animals, whilst it adds to the firmness and stability of the superstructure. By another mode, such substructures may be formed in blocks or solid masses for conveyance to the site of the building, the blocks or masses, when laid in position, being cemented or joined *together* by asphaltic composition, or being otherwise combined. Instead of *using* asphaltic compositions, or mixtures wherein real asphalte is an ingredient, any pitchy or resinous matters may be employed on the asphaltic principle.

In practice, the asphaltic foundations may be laid either with or without other substratum. When laid entirely of asphalte, the thickness of such asphaltic material is intended to be from one to two feet, according to the nature of the soil and the weight of the superstructure to be erected thereon. If stone foundation-blocks are used, in combination with the asphaltic base, a single layer of the asphaltic material will usually be sufficient, the foundation-blocks being then laid upon the asphaltic layer; or, if concrete is used, a layer of asphalte may be deposited upon the concrete.

RAILWAY AND ALARM SIGNALS. Captain J. Norton, Cork. *Patent dated January* 19, 1854.—Captain Norton, with whose numerous inventions, connected with artillery and warlike projectiles, we have already made our readers acquainted, has turned his attention, with equal success, to several contrivances for danger-signals, and for effecting communications between different parts of railway trains. According to Captain Norton's system, the guard, or other official, who is to make the signals, is supplied with a cross-bow, or other similar impulsive apparatus, as well as with a number of explosive missiles or projectiles of a peculiar kind. These projectiles, or shot, are composed of tubes of stiff paper, thin sheet iron, or other suitable

material—the paper, or case material in each being sufficiently rigid to withstand the effect of the shock of the cross-bow in firing. This tubular case is filled with Hall's gunpowder, or other explosive agent; such, for example, as is used in Captain Norton's fog-signals — that is, chlorate of potash, and sulphuret of antimony. This forms what may be termed a charged arrow, and its heel, or the part next the bow-string, has one or two heads of Bell's lucifers, or other frictional explosive matter attached. With this arrangement, when the shot or arrow is discharged, the friction generated during its passage along the bow-shaft, or stock, ignites a fuse composition,¶ or frictionally-explosive contrivance, communicating with the exploding charge. In this way the guard can shoot his signal in the direction of the engine-driver—the explosion being made to occur at any determined distance in front of the driver—so as to command his attention in the most peremptory manner, by a mimic display of lightning and thunder; or the composition in the case may be such as burns comparatively slowly, so as to continue during the entire flight of the arrow. A few grains of coarse emery powder are attached by means of glue or gum to the front part of the cross-bow stock, to cause the certain ignition of the fuse composition.

These signal missiles may be discharged in various ways. Thus, the exploding arrow may be discharged from a cross-bow, or from the "arbalist," with caoutchouc springs lately introduced by Mr. Hodges. The short whistling missiles may be discharged from rifles or muskets, or from small mortars made for the purpose. When it is required to discharge a number of such signal missiles in rapid succession, Captain Norton employs the following simple plan. He fits a number of the missiles with suitable percussion cartridges, the percussion contrivance being at the heel or back of the cartridge. Then taking a musket or rifle, in the barrel of which the missile will fit very loosely, and placing it at a convenient inclination, he drops the missiles down the barrel. On reaching the breech, the percussion will ignite the cartridge, and discharge the missile. A plain gun-barrel, without either touchhole or lock, will answer perfectly for thus discharging signal missiles; and the plan admits of great rapidity in loading and discharging, these two operations being produced by one and the same action.

General Agency.—The publisher of *The Plough, the Loom, and the Anvil*, believing it in his power to be of essential service to the readers of that journal, in the purchase or sale of various articles, and the transaction of various kinds of business, would announce to them that he is ready to execute any such commission which he may receive, including the purchase of books of any description; implements connected with agricultural, manufacturing, or mechanical operations; artificial manures; farm and garden seeds, etc., etc. One of the gentlemen connected with the journal is a proficient in music, and experienced in the selection of piano-fortes, flutes, etc., and will execute orders in that department.

He will also act as agent in the purchase and sale of Real Estate.

☞ Particular attention to business connected with the Patent-Office.

Letters of inquiry on these matters will be promptly attended to.

School-Teachers. — Having had occasion to furnish teachers for some of our Southern friends, we have been fortunate enough to learn of several young ladies who are admirably well qualified for families or schools, and if any are in need of such, a letter addressed to us will receive immediate answer. We shall not fear to guarantee that any reasonable expectations will be fully met. So me of them are desirous of going South.

NEW BOOKS.

WEBSTER AND HIS MASTER-PIECES. By Rev. B. F. TEFFT, D.D., LL.D., author of "Hungary and Kossuth." In 2 vols. Auburn and Buffalo: Miller, Orton & Mulligan. 1854. 498 and 536 pages, large 16mo.

MR. WEBSTER was the man of the age. He was not merely a great lawyer, not merely a great statesman, not merely the personification of eloquence—he was all these, and much more beside. We have seen him too often, and known him too well, to be afraid of exaggerating his intellectual greatness. He who writes of such a man, is, to some extent, under a certain indefinable power, a charm, so that his pen is almost moved by an external power. At least this is our experience. So far as a cool criticism of a particular effort is concerned, it is well that it be done by a stranger. Of the volumes before us, the first consists of biography. The early life of Mr. Webster is dwelt upon—perhaps wisely; and would that the youth of our country would learn wisdom from the example. In mature years, he is regarded in his various capacities as lawyer, representative in Congress, Secretary of State, Senator, and the closing period of his life. We have but partially perused this volume, but the work appears to be well done. The selection of speeches, his "master-pieces," is excellent—none better could be made. The first volume contains an excellent full-length likeness. We commend these volumes to every patriot, and every one who would honor the greatest man of the age.

THE LAMPLIGHTER. Illustrated Edition. By THWAITES. Engraved by Baker & Andrew. 73D THOUSAND. John P. Jewett & Co., Boston.

WE have already noticed this capital story. But the enterprising publishers, who well know where to bend their energies, have here given to the public a well-illustrated edition. This will increase its sale, already so remarkable. That a young lady, scarcely out of her teens, and with little practice as a writer, should sit down and pour out, as from a fountain, such a tale, with so many scenes not only of great beauty, but scenes also of great power, is passing strange; and the motive for doing it, which is too holy for the public gaze, is so lovely we know not what to say of it. Truly our daughters are yet worthy of their sires. *She hath her reward.* The literary faults that may be picked from these pages, if multiplied by scores, would scarcely weigh any thing against all these remarkable attractions. For sale by Sheldon, Lamport & Blakeman, New-York.

LEAVES FROM THE TREE IGDRASYL. By MARTHA RUSSELL. Boston: John P. Jewett & Co. 1854. pp. 348.

LIFE is figured by the old Norsemen as a tree—the tree Igdrasyl. These leaves are thence representations of so many lives. The author of this volume has here presented them to us in various forms. Distinct and independent stories make up the volume. All are readable, several are capital, and some pages are of peculiar power. We think, however, that the author shows an ability to do more than she has done. We read a few pages, by way of introduction to some tale, get deeply interested, and the curtain drops—the story closes. We have read, however, only the first half of the volume, and perhaps the remainder of the volume is not open to such a criticism. It is, however, an especially venial fault to charge upon an author, that she does not write enough. The large majority write too much. For sale by Sheldon, Lamport & Blakeman, New-York.

SYNONYMS OF THE NEW TESTAMENT; being the substance of a Course of Lectures addressed to the Theological Students of King's College, London. By RICHARD CHENEVIX TRENCH, Professor of Divinity, King's College, etc. Redfield, New-York. 1854. 12mo. 248 pages.

THIS learned treatise is well defined by its title. It is limited, of course, in the number of words which it defines, but about a hundred and fifty are treated under sixty different classes, and their exact shades of meaning are given with very learned accuracy, and the distinctions claimed for each are enforced by citations from some author of acknowledged authority. It is a book of great value, not only to the critical scholar, but to the careful reader.

THE CAPTAINS OF THE ROMAN REPUBLIC; as compared with the great Modern Strategists, their Campaigns, Character, and Conduct, from the Punic Wars to the death of Cæsar. By WM. HENRY HERBERT. New-York, Chas. Scribner. 1854. 511 pages, royal 16mo.

THIS very entertaining and instructive volume is one of a *system* rather than a series, to use the author's favorite expression. Each volume is independent of all others, and yet each is of a similar character with the rest, and, like all histories, they all are more or less related to each other. Mr. Herbert has been judicious in selecting those "who were really eminent, really entitled to be enrolled in the annals of all time." Passing by the merely fighting leaders of the youthful republic, he begins with Scipio Africanus, and follows with Titus, Quinctius, Flaminius, Lucius, Æmilius, Paulus, Caius Marius, Sylla, and Julius Cæsar. The work exhibits great ability, and is valuable for all classes of educated readers.

MOTHERS OF THE BIBLE. By Mrs. S. G. ASHTON, with an Introductory Essay by Rev. A. L. STONE. Boston: John P. Jewett & Co. 335 pages.

THIS volume commends itself to our favor when we notice the name of the writer of the introduction. We entertain for Mr. Stone the most profound respect. As a writer, he has peculiar merit, and in all respects he is a man. His commendation would give us confidence to indorse any work he had examined.

The "Mothers" are described with a good deal of feeling, and with power, and perhaps we might say with genius, for the author is quick in detecting character from trifling incidents. Perhaps the language is sometimes a little turgid, but the book will interest every lover of the Bible.

In the execution of the work, the publishers deserve all praise. Mr. Jewett has here given us the handsomest volume for the price we have ever seen. The paper, the typography, and the binding are all very superior, seldom equalled, and can not easily be surpassed.

MARTIN MERRYVALE, HIS × MARK. By PAUL CRÉYTON; illustrated. Boston: Phillips Sampson & Co. For sale by J. C. Derby, New-York.

THIS book is peculiar. The plot is peculiar, the characters, many of them, are peculiar, and their identity is sustained with uncommon ability. Little Alice at once excites your sympathy and never loses it. But she has that *peculiar gift*, spiritual vision, which is scarcely rivalled by the Foxes and their associates of real life, though her visions differ from theirs in kind. The character of "Brother Martin" is admirably done. Few volumes of this description exhibit so much talent or excite so much interest in the reader.

THE KNOW-NOTHING. (!) John P. Jewett & Co., Boston. 1855.

WE regard this as a well-written and good book. The plot is slight, but considerable ingenuity is shown in connecting it with the secret and truly Christian organization of "The Sons of Benevolence, Patriotism, and Good Deeds." Of this association, the members themselves and the readers no less are left in doubt, even to the last, whether it be of the order of Know-Nothings. On this subject, at least, those who read may claim the title as their own. It may be had of Sheldon, Lamport & Blakeman, New-York.

IDA MAY. A Story of Things Actual and Possible. By MARY LANGDON. Boston: Phillips, Sampson & Co. 1854 478 pages.

THIS volume belongs to the same style of literature as "Uncle Tom's Cabin." The heroine, Ida, is represented as a white girl who was kidnapped at an early age; but, under the protection and care of the family into which she is sold, she becomes an accomplished young lady, and is well married. The events connected with her life abound in painful incidents, but the narrative is so conducted as to give unusual interest to the story. For sale by J. C. Derby, New-York. The seventh thousand is already announced.

List of Patents Issued

FROM OCT. 3 TO NOV. 7.

Chas. P. Baily, Zanesville, improvement in railroad car seats.

Leander W. Boynton, South-Coventry, Ct., improvement in machinery for making hat-bodies.

John A. Bradshaw, Lowell, shingle-machine.

Jesse Carpenter, New-York, improvement in spinning rope and cordage.

Stephen D. Carpenter, Madison, Wis., rotary pump.

Samuel Carpenter, Flushing, improvement in machine for turning hubs, tool-handles, etc.

John D. Dale, Philadelphia, cutter-heads for planing-machines, etc.

Edwin G. Dunham, Portland, Ct., improved rock-drill.

Augustus Eckert, Trenton, Ohio, improvement in magnetic alarm-bells.

Thaddeus Fowler, Waterbury, Ct., improved sewing-pin.

Louis A. Gossin, Thibodeaux, La., improvement in the construction of sugar-making apparatus.

Benj. F. Gossin, Covington, Ky., improvement in railroad chair machinery.

John W. Griffiths, New-York, improvement in the construction of ships.

Robt. Grant, New-York, improvement in brakes for checking and starting cars.

Eben N. Horsford, Cambridge, Mass., improvement in compounds for neutralising chlorine. English patent, May 9, 1854.

Simon Ingersoll, New-York, improvement in pawl-drills.

John Jack, Fayetteville, Ohio, improved sawgummer.

Lyman Jennings, Erving, Mass., improvement in cans for holding liquids.

Stephen C. Mendenhall, Richmond, Ind., improvement in looms.

Elijah Morgan, Morgantown, Va., for shingle-machine.

Richard Oliver, New-York, improvement in fastening for garments.

E. Prescott, Leominster, Mass., improvement in machines for splitting horn, etc.

John P. Sherwood, Fort Edward, improved damper for ovens.

Cornelius Speer, New-York, improvement in ginning and cleaning cotton.

Henry Tongue, Nashville, Tenn., improvement in steam-engines.

Henry Volkening, New-York, polishing-machine.

Albin Warth, New-York, improvement in turning-lathes.

Irvin A. Williams, Utica, improved locomotive-lamp.

Thos. B. Woodward, Kensington, Pa., improvements in smut-machines.

Edward S. Woolsey, Astoria, N.Y., improvement in the construction of sugar-boilers.

Samuel B. Howd, Syracuse, assignor to Thomas F. Davis, James S. Leach, and Richard F. Stevens, improvement in process for the manufacture of salt.

E. B. Bigelow, Boston, Mass., improved loom for weaving cut-pile fabrics. Patented in England Dec. 31, 1851.

J. T. Barnes, Manayunk, Pa., improved power-loom.

Daniel Barnum, New-York, machinery for trimming hat-bodies.

J. D. Elliott, Leicester, Mass., new form of water-meter.

E. A. Hill, Joliet, Ill., smoke-consuming stove.

W. D. Horton, Petersburg, Ind., shoemakers' edge-planes.

B. J. La Mothe, New-York, improved iron buildings.

John H. Manny, Freeport, Ill., ante-dated June 15, 1854, grain and grass-harvesters.

Chas. Ross, Rochester, N. Y., improved grinding surface in mill-stones.

Moses Sargent, Meredith, N.H., improved roving-tube in cotton machinery.

John J. Squire, St. Louis, Mo., improved sawing-machine.

R. B. Stevenson, York, Ohio, improved water-pipe.

C. F. Thomin and Chas. Stumer, Cincinnati, Ohio, new mode of enameling iron.

Henry Wayne, Cincinnati, Ohio, joint for toilet-glass.

E. D. Williams, Wilmington, Del., and T. Tyrrell, York, Pa., improved brick-press.

John Yandell and Joseph H. Johnson, St. Louis, Mo., improvement in iron bridges.

J. H. Stimpson, Baltimore, Md., (executor of Jas. Stimpson, deceased,) ante-dated April 17, 1854, vessels for holding liquids.

John Richardson, New-York, new pen and pencil-case.

Henry F. Baker, Centreville, Ind., improvement in ploughs.

Mark S. Bassett, Wilmington, Del., improvement in sifting and bolting.

John D. Bedwell, Uhricksville, Ohio, improvement in smut-machines.

Archibald Bowen, Wadesville, Va., improvement in straw and grain separators.

Robert Boyack, Poughkeepsie, improvement in machinery for softening hemp and flax.

Samuel W. Brown, Lowell, improvement in machinery for cleaning cotton.

Patrick S. Devlan, Reading, improvement in chairs for round rails.

Geo. L. Dulaney, Long-Meadow, Va., improvement in mill-bushes.

Absalom B. Earle, Franklin, N.H., improvement in seed-planters.

Ebenezer Ford, Spring-Cottage, Miss., improvement in granaries.

Julius Herriet, New York, improvement in gutta-purcha stereotype composition.

Jos. Johnson, Wilmington, Del., improvement in bran-dusters.

Robt. H. Jenks, Bridesburg, Pa., improvement in looms.

John G. McNarr, West-Farms, improvement in manufacturing carpets and rugs.

Gustav Frederich Palmie and Annon Herrmann Palmie, Berlin, Prussia, improvement in fire-arms.

Myer Phineas, New-York, improved pen-holder.

Edward L. Perkins, Roxbury, Mass., improvement in machinery for polishing paper.

Jas. Renton, Cleveland, improvement in making wrought-iron direct from the ore.

John H. Rauch, New-York, improved sliding pen and pencil-case.

John Richardson, New-York, improvement in pen and pencil-cases.

Josiah Shanklin, Parkersburg, Va., improvement in square, scale, level, and bevel.

Benj. Sherwood, New-York, improvements in safes.

Emile Sirret, Buffalo, improvement in fastening lamp to lanterns.

Oron W. Wade, Versailles, N. Y., improvement in stoves.

Wm. Warwick, Birmingham, Pa., improvement in mills.

Benj. H. Wright, Rome, improvement in rotary steam-engines.

Walter Bryant, Boston, Mass., assignor to J. B. Kelsey, of same place, improved air-heating furnace.

Wm. Campbell, West-Philadelphia, assignor to himself and E. W. Shippen, Philadelphia, improvement in bearings for loose pulleys.

Wm. Porter, Williamsburgh, N. Y., assignor to Joseph N. Howe, Boston, improvement in securing lamps to lanterns.

Mark R. Peerson, Georgetown, Mass., assignor to himself and Samuel Shaw, Wareham, Mass., improvement in roller-catch for self-acting mule.

Nathan Atherton, Philadelphia, improvement in steam-engines.

Abraham Bassford, New-York, improved key for tuning piano-fortes.

A. A. & G. H. Babcock, Westerly, improved press for printing in colors.

Charles Balder, New-York, knife-dye for cutting leather straps for whips.

Joseph Barker, Honesdale, Pa., improvement in grain-winnowers.

Ephraim Brown, Lowell, improved burglars' alarm.

Wm. Clemson, Boston, improvement in apparatus for tempering and flattening saws.

Harry H. Evarts, Chicago, assignor to himself and A. J. Brown, of same place, shingle-machine.

Junius Foster, Green-Point, improved burglars' alarm.

Wm. Gates, Jr., Frankfort, N. Y., machine for filling match-frames.

Robert Heneage, Lowell, improvement in tooth-clothing for picker-cylinder.

John C. Howe, Milwaukee, improvement in fire-arms.

John Harris, Lansingburg, and John B. Stoll and Galen Richmond, Troy, improvement in machinery for making rope and cordage.

Chesley Jarnagin, Clinton, Tenn., improved seats for wagons.

Richard Kitson, Lowell, improvement in machinery for picking cotton and other fibrous substances.

John M. Krider, Newton, Stephensburg, Va., improvement in tailors' measuring instruments.

Samuel Lenher, Philadelphia, attachment to syphon.

Warren and Charles F. Lillibridge, Zanesville, improved tailors' measure.

James E. McConnell, Welverton, England, improvement in railroad car axles.

Daniel Moore, Williamsburgh, improvement in cartridges for breech-loading fire-arms.

Daniel Moore, Williamsburg, improved powder-flask for breech-loading guns.

Vincent Palen, Portsmouth, Va., improved arrangement in mechanism for sawing off piles under water.

John Richardson, New-York, improved pen and pencil-case.

Elhanan W. Scott, Lowell, machine for manufacturing mast-hoops.

Wm. J. Stevenson, New-York, improved soldering furnace.

Samuel R. Thorp, Batavia, improvement in odometers.

Julius Thompson, Middleboro', N. Y., improvement in odometers.

Samuel Vansyckel, Little-York, N. J., improvement in grate-bars.

R. A. Wilder, Schuylkill-Haven, improved arrangement in spark-arresters for heating feed-water.

S. R. Wilmot, New-Haven, water-meter.

Alonzo S. Woodward, Lowell, and Benj. F. Bartlett, Pepperell, Mass., improvement in machinery for cutting rags for making paper.

William Sewall, Brooklyn, improvement in surface-condensers. Patented in England, Jan. 13, 1854.

D. C. Ambler, New-York, improvement in sewing-machines.

John B. Brennan, Mount-Vernon, N.Y., improvement in locks.

Albert Boughton, Malone, N. Y., new machine for polishing stone.

R. S. Craig, Cincinnati, Ohio, new form of trap for catching wild animals.

Reuben Daniels, Woodstock, Vt., improvement in water-wheels.

Ferdinand Davison, Petersburg, Va., stone-drilling machine.

Jacob Green, Philadelphia, improved glass-furnace.

Samuel Gunsaer, Aurora, Ill., corn-sheller.

S. S. Hawthorne, Orange, Ct., improved form of buckle.

A. K. Hay, Winslow, N. J., improved glass-furnace.

H. S. Higgins, Graham, Ind., machine for manufacturing barrels.

Thos. Kendall, San Francisco, bottle-stoppers.

Joseph Leeds, Philadelphia, improved furnace for heating buildings.

E. E. Marcy, New-York, improved method of vulcanising gums.

W. N. Martin, Bristol, R. I., new form of coal-hod.

I. W. McGaffey, Philadelphia, improved potato-digger.

Barnet McKeage, Accotink, Va., sawing bolts for staves.

E. T. Miller, Boston, improved bomb-shell or grenade.

Geo. Miller, Providence, R. I., improved leather-banding for machinery.

Edmund Morris, Burlington, N. J., new form of slate-frame.

M. P. Norton, Tinmouth, Vt., brakes for railroad cars.

Dewey Phillips, Shaftsbury, Vt., improved farm-gate.

E. W. Rider and J. Murphy, New-York, improved method of desulpharizing gutta-percha and other elastic gums.

E. W. Roff, Newark, N. J., new method of cutting tenons on blind-slats.

Chas. Rumley, Rochester, N. Y., steam-engine valves. Do., improved rotary steam-engine.

Isaac Searles, Newark, N. J., machinery for making hat-bodies.

R. M. Selleck, New-York, harness-saddles.

Jas. Slater, Macon, Geo., new mode of operating circular saws.

J. P. Smith, Hummelstown, Pa., corn-shellers.

B. H. Washington, Hannibal, Mo., improved mode of directing air-blast in furnaces.

Elbridge Webber, Gardiner, Me., machine for making shovel-handles.

Charles Wilson, Springfield, Mass., improved lock.

Wendell Wright, New-York, improved lock for fire-arms.

S. T. Thomas and Eliza Ann Everett, adm'x. of Edward Everett, of Lawrence, Mass., improved loom-beam.

John Jenkins, Monroe, N. Y., assignor to Rue Horton & Co., of Chester, N. Y., carriage-lifting jacks.

John P. Avery, assignor to J. B. Bromley, of Norwich, Ct., stone-dressing machine.

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No. 7. Jan., 1855. Vol. 7.

THE PLOUGH

THE LOOM AND THE ANVIL.

FARMER AND MECHANIC.

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The Plough, the Loom, and the Anvil.

Vol. VII. JANUARY, 1855. No. 7.

SCIENCE IN AGRICULTURE.

In our November number, we gave a full account of the arguments, on one side and the other, which are derived solely from experiments, on the question, "Whence do plants derive their nitrogen?" And we have repeatedly given it as our opinion that, if the ground is in a proper condition, every plant will find this element without difficulty. We can not doubt this, and would by no means therefore commend the heavy outlays of millions of dollars annually, in this country, to obtain what the atmosphere, and rains, and brooks contain in abundant quantities, and readily supply without cost. But this is by no means the only department of agricultural science on which there is a diversity of opinion. The number of unquestionable facts, touching the cultivation of the soil, is exceedingly limited.

Thus, it is one of our "received" doctrines that the soil must contain what the plant requires, and yet if the nitrogen of the plant is furnished from the air and from water, this is, at least, one exception. Another element is, no doubt, supplied from other sources, to wit: the carbon. From the statements presently cited, as well as from other sources, we may conclusively draw the inference, that the soil itself can not furnish the amount of carbon contained in the growing plant. Hence the statement of this general principle should be modified so far as to say that of the *inorganic elements*, the soil is the only known reservoir.

We ought perhaps to add, in this connection, for the sake of avoiding apparent inconsistencies between these statements, and those made by us elsewhere, that the conditions belonging to a "fertile soil" are, *undoubtedly*, required for the most productive crops. The only question is, Why such conditions are required? For it is also true that, while the most successful cultivation peremptorily requires the presence of all these conditions, it still does not necessarily follow that the soil itself conveys, from its own substance into the plant, a single one of its elements. Such an inference would no more be logical than to infer from the fact that some persons can sleep best on a bed of down, that the down furnishes and communicates substantial elements from its own material, in the production of sleep. Because any given physical arrangements are of great utility, or even absolutely essential in furnishing facilities for certain operations, it does not necessarily follow that those arrangements are themselves immediately efficient in performing these operations. They may be merely the staging, by the aid of which other materials are combined into an organized structure.

But we do not purpose to extend this discussion here, but lay out the ground and partially illustrate the present condition of agricultural science, by the passages already referred to, from a very learned German writer.

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"The goodness of the soil," he says, "depends upon its inorganic constituents—so far at least as they are soluble in water, or through continued action of carbonic acid; and the more abundant and various these solutions, the more fruitful is the ground." Arguing from this view, it is not richness of soil or humus that produces the multiplied varieties of alpine plants in Germany, or the absence of it that produces but few. "Soluble mineral constituents" are shown to be the characteristic of our cultivated field; and "an agricultural plant" is defined as one "distinguished from wild individuals of the same species, by peculiar qualities, which constitute its fitness in culture, and which depend upon a modification of chemical action." The amazing yield of Indian corn in Mexico—from two hundred to six hundred fold—is something which, with all our skill, we can not accomplish, and is a fact in favor of the argument, "that in no case do the organic substances contained in the ground perform any direct part of the nutrition of plants." The annual destruction of organic matter all over the earth is estimated at 145 billions of pounds, equal to 2¼ billions of cubic feet; and if all vegetation depends on organic matter for nutrition to satisfy this consumption, "there must have been, five thousand years back, ten feet deep of pure organic substance on its surface." Another illustration is furnished by taking the number of cattle and other animals in France in a given year, (1844,) and observing the amount of food they consume. The process of nutrition would require 76,789,000,000 pounds of organic matter—six times more than the whole number contribute of organic matter toward the reproduction; and in 100 years "the whole organic material of the country would be consumed!"

Again, look at a farm. How much more is carried off from it than it gives back again; generally the amount of its yield is three times greater than that of the organic matter it receives: while of the manure applied, the greater part is not taken up, but imperceptibly decomposed. Carbon is the most important of the constituents of plants. An acre of sugar plantation produces 7500 pounds of cane, of which 1200 pounds are carbon; and yet sugar plantations are rarely manured, and then only with the ashes of the burnt canes. With bananas, the result is still more striking; the yield is 98,000 pounds of fruit in a year from a single acre; and of this 17,000 pounds, more than a fifth, is carbon; and the same acre will give the same return, year after year, for twenty or thirty years; and the ground at the end of that time will be richer than at the commencement, from nothing more than the decay of the leaves of the plant. Here in Europe, too, the difference in weight and in carbon between the seed and the produce has often been noted: in wheat, 89 per cent; in red clover 158 per cent; in peas, 361 per cent. These facts afford evidence of a supply of carbon derived from other sources than those commonly supposed to exist; and while we know that seeds will germinate and become vigorous plants in pure quartzose sand, or in cotton wool, or on a board, we seem to have proof that the chief source of supply is the atmosphere. This is an interesting point, which further research will verify. Schleiken shows the process to be eminently simple. He says in his work: According to Link, Schwartz, and others, an acre of water meadow contains 4400 pounds of hay; which, when dry, contains 4⅝ per cent of carbon. The hay then yields 1000 pounds of carbon, to which 1000 pounds may be added in the portion of the year in which the grass is not cut, and the roots. To produce these 3000 pounds of carbon, 10,980 pounds of carbonic acid are requisite, which may be raised to 12,000 pounds to compensate for the nightly expiration. · Now Schubler has shown

that an acre of so wretched a grass as *Poa annua*, exhaled in 120 days of active vegetation, 6,000,000 pounds of water. To supply the exigencies of the plants, therefore, it is only necessary for the meadow to imbibe 3½ grains of carbonic acid with every pound of water.

Mr. Lawes has found also, in a plant of any one of our ordinary crops, more than 200 grains of water must pass through it for a single grain of solid substance to accumulate within it. He states that an evaporation from an acre of wheat during the period of its growth, to be 114,860 gallons, or 73,510,000 gallons per square mile. With clover it is rather more; with peas and barley less. When we apply these calculations to a county or a kingdom, we are lost in the magnitude of the processes by which nature works, but we see the more clearly that on such a scale the quantity of material supplied by the air, though minute to the individual, becomes vast in the aggregate. We, see moreover, the necessity of understanding the relations between the evaporation and rate of growth, and the laws and effects of absorption in soils. A thousand pounds of dry calcarcous sand will gain two pounds in weight in twelve hours, when the air is moist, while pure agricultural clay will gain thirty-six pounds.

The source of nitrogen comes next to be considered; and this also is seen to be independent of manures. Hereupon it is observed, that "our domestic plants do not require a greater supply than in a state of nature. A water meadow which has never received any dung, yields from forty to fifty pounds of nitrogen, while the best ploughed land yields only about thirty-one pounds. The plants for which most dung is used, as potatoes and turnips, are in fact proportionally the poorest in nitrogen." That there is a supply independent of the soil is further seen in the millions of hides furnished every year by the cattle of the Pampas, without any diminution of produce; and in the great quantity of nitrogenous matters, hay, butter, and cheese, carried off from pasture land, far more than is returned by the animals fed thereon. Experiments with various kinds of plants, on various soils, have satisfactorily demonstrated that increase of nitrogen in the land and in the crop, does take place quite irrespective of supplies of manure.

With respect to ammonia, "it appears that one thirteenth of a grain in every pound of water is sufficient for the exigencies of vegetation, and there is perhaps no spring water in the universe which contains so little." Then as to sulphur and phosphorus, which are also among the constituents of plants, the quantity needed in proportion to the time of vegetation is so small, that one 540,000th of a grain of sulphuretted hydrogen per cubic foot, diffused through the atmosphere to a height of 3000 feet is all that is required. The consideration that cereals would soon disappear from the north of Europe, if not cultivated, and perhaps from nearly the whole of this quarter of the globe, adds weight to the arguments in favor of enlightened attention to the inorganic constituents of plants. The point is to bring the soil into harmony with the conditions by which growth may best be promoted. Much depends on the nature of the soil; the darkest colored lands are generally the highest in temperature, hence the advantage of vegetable mould, while deep light sands and clay, which turn almost to stone in dry weather, weary and vex the cultivator by their unprofitableness. It is to be remembered, however, that soils which have the highest temperatures of their own, may not be those most susceptible of receiving heat—that is, from the sun, because some lands are warmed by the springs that irrigate them. Here we have an explanation of the phenomena of certain soils, which are warm in winter

and cool in summer. The application of humus evolves heat by the process of combustion, and sand, lime, clay, and humus are the combinations needed, the clay being in a proportion of forty to fifty per cent; if less than ten per cent, the land will be too light and poor.

ARCHITECTURE.

In a former number, in illustrating the social influence of architecture, we referred to the change of the *hearthstone* for the close stove, or the *register*, and the bright and cheerful fire for the distant and invisible furnace. How great is that change! It removes one of the elements which had an important influence in binding families together, in past generations, and it brings in its stead—nothing. We can ill afford to lose so important a check upon the wayward tendencies of youth. It makes home far less attractive.

This is one point in which we have lost much. There are others in which we neglect our opportunity to gain much. We quote from Ruskin: "Have not these words, pinnacle, turret, belfry, spire, tower, a pleasant sound in all your ears? I do not speak of your scenery, I do not ask you how much you feel that it owes to the gray battlements that frown through the woods of Craig Millar, to the pointed turrets that flank the front of Holyrood, or to the massy keeps of your Crichtoun and Bosthwick, and other border towers. But look merely through your poetry and your romances; take away out of your ballads the word *tower* wherever it occurs, and the ideas connected with it, and what will become of the ballad? See how Sir Walter Scott can not even get through a description of Highland scenery without help from the idea:

> 'Each purple peak, each flinty spire,
> Was bathed in floods of living fire.'

Take away from Scott's romances the word or idea *turret*, and see how much you would lose. Suppose, for instance, when young Osbaldistone is leaving Osbaldistone Hall, instead of saying 'The old clock struck two from a turret adjoining my bed-chamber,' he had said, 'The old clock struck two from the landing at the top of the stairs,' what would become of the passage? and can you really suppose that what has so much power over you in words has no power over you in reality? Do you think there is any group of words which would thus interest you, when the things expressed by them are uninteresting? For instance, you know that for an immense time back, all your public buildings have been built with a row of pillars supporting a triangular thing called a pediment. You see this form every day in your banks, and club-houses, and churches, and chapels; you are told it is the perfection of architectural beauty, and yet suppose Sir Walter Scott, instead of writing 'Each purple peak, each flinty spire,' had written 'Each purple peak, each flinty pediment,' would you have thought the poem improved? And if not, why would it be spoiled? Simply because the idea is no longer of any value to you; the thing spoken of is a nonentity.

These pediments, or stylobates and architraves, never excited a single pleasurable feeling in you—never will to the end of time. They are evermore dead, lifeless, and useless, in art as in poetry, and though you built as

many of them as there are slates on your house-roofs, you will never care for them."

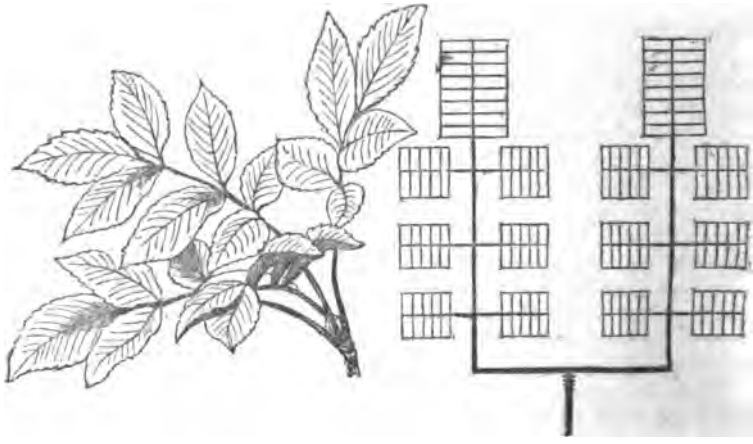
It may be said that all this is poetry. Granted, if you please, only acknowledge that it is reality. If it is poetry, it is something we can ill afford to lose. Our developments of cold, business, acquisitive, delving, debasing tendencies are monstrous. If we let go what little there is of poetical, imaginative, devotional, in us, we shall be monsters indeed.

What ends are to be gained by architectural structures? Why build any houses or churches? The first answer is, for utility and comfort; we need protection from the elements, whether by night or by day. But these objects will be equally well secured by much cheaper structures than are built even in our economical times. This end is not obtained by means of architraves or pediments, pilasters or porticoes. An open shed is even a better defense than a handsome balcony, and many a barn is a better protection against cold than some much more costly arrangements. We know of nothing more comfortable in a cold day—it is one of our boyish reminiscences—than a nice, sweet "hay-mow." "Yes, but we also want the courtesies and refinements of cultivated life." We admit it, and contend that few things have a more decided influence in this respect than tasteful architecture. Why do you buy a mahogany or rose-wood bedstead? Would not pine do just as well? Polishing and painting can not secure a good night's sleep. No, but that gentleness, that kindness, that love of all things beautiful and true, which is prompted by tasteful designs, carved out and combined gracefully and truthfully, are points of incalculable importance in the formation of the character of the young and also of the old. The manners of the roughest clown will be somewhat subdued as soon as he enters the threshold erected and furnished by a refined taste.

There are certain things very trivial in some respects, which show in bold relief the truth of the doctrine we inforce. We refer to those barbarous designs—designs barbarous in their origin, at any rate—which represent some little image of gold or bronze, which is so often seen holding up the bowl of a large lamp, or the branches of a candelabrum or of a gas-burner. What child has not remarked upon the fatigue which such a little baby-boy must inevitably suffer? How different the effect, if this same sculptured little boy were only climbing up after a branch of grapes, or some other delicious fruit? We referred, some months since, to a very elegant church in this city, on the Fifth avenue, in which the entire weight of the ceiling rests on human heads. Was any thing ever more absurd? What if the idea is copied from an old master of the fifteenth century? It proves that, great as he was, he could blunder;—that the feat has not yet been witnessed, of an architect who has risen by his own genius, perfect in *all* his proportions, out of the depths of the dark ages. That he has exhibited so few such weaknesses, is one of the greatest of wonders. And modern times show too often how much easier it is to copy errors than to copy truths. We remember another similar remnant of those same dark ages. In the beautiful chapel of the New-York University, you may see, high up on the walls, some chubby little fellows, secured in their places by having their limbs below the knees, (the knees being bent at right angles,) set into the solid wall. As we have listened to some eloquent lecturer in the desk, and our eyes have strayed upward to those chiseled forms, we have felt sincere pity for them, and have wondered why they were doomed to so painful a posture. Besides, if the strength of their knees should fail them, they would swing as on a hinge, and dash their breasts and faces against the wall below, to the ruin not only of

this over-tasked joint, but of their whole persons. Scholars should be more humane.

We are now prepared for a further reply to the question, "What ends are to be gained by architectural structures?" and we say, secondly, to open the way for the graces and amenities of refined society. Whoever admits this, will hold no controversy with us. If any one should be disposed to deny this, we are at a loss to know on what ground he would favor the customs universally prevalent, to a greater or less extent, in civilized communities. Such a man would be contented with a country where the groves and woods were formed in right lines and rectangles, after the fashion of a diagram given in a former number, and which we here repeat for his especial benefit.



And can any one tell us why *living* matter should always—ALWAYS, exhibit some form of the pointed or arched style, any more than dead forms? Yes; convenience. It would be inconvenient, sometimes, to carry out thoroughly this feature, so universal in God's architecture; and this is the only exception that is admissible. It is not proper that utility should be sacrificed to appearances. Wherever the *law of necessity* does not command a different course, let not the law of good taste be violated. In the whole universe of nature there can not be found a specimen of rectangular architecture. The sun, and moon, and stars, are bounded by arched walls. The constellations are grouped in various forms, so that when variously connected, at pleasure, they will present an indefinite variety of figures; and yet, it would be difficult to find any four prominent stars that, when grouped, would make a perfect rectangular figure. We do not allude to this as a fact of very grave authority on the subject before us, but only to show that this style is peculiarly a device of our own invention, and therefore very likely to be inferior, in some essential particular, to the devices of Him who is of infinite wisdom and of perfect truth.

Who would not as soon have devised square plates, and square and cubic forms for a tea service, as square windows? But we need not dwell further on this point. There are greater evils to contend against. Our architecture is scarcely more than a hap-hazard mixture of many crudities and meannesses. We shall endeavor hereafter to bring some of them to the light, that they

may be destroyed. But we would endeavor to have some correct principle to stand upon, ere we undertake any important step in the progress of the science, that, if need be, we may safely retrace our steps and secure a right direction.

FARMING ON TAR RIVER.

MR. EDITOR: Facts are sometimes stubborn things, and some men are stubborn farmers, and cultivate stubborn soils, and complain of their Maker, because he does not send genial showers and favorable seasons, and make them good crops.

Who is to blame, the soil or the farmers? No one but those stubborn and self-conceited farmers, who will not read and learn, because, forsooth, *no one can teach them any thing about their avocation!*

Now, I have contended for years, that any planter tolerably well situated for the purpose, on the ordinary up-lands of the oldest settled portions of the South, can make more *manure* and *manure more land* in a year, than *he can clear* and take into cultivation from the forest, and the manured land will make more corn and cotton, one year with another, than the cleared land. There is no doubt about this, and I can produce many witnesses to prove it.

But let one suffice, in this instance, and speak for himself from *Tar River*.

I quote an extract from Mr. John S. Dancy's letter published in the *Farmers' Journal*, at Raleigh, for July.

He says, "I give you an account of our preparations for the crop of '54. In the first place, our laboring force on Panola consists of 34 horses, of various sizes, ages and qualifications; 20 head of mules, and 3 yoke of oxen. During the year 1853, we had two wagons constantly employed in hauling up materials for manure making, besides taking advantage of every day, (when the condition of the growing crop would justify it,) to make compost with our entire force. The interval between laying by the crop, and the beginning of the fodder-pulling and cotton-picking season, (usually from two to three weeks,) was busily devoted to the making of compost and filling up our cattle and hog lots.

After housing our crops of corn, cotton, and peas, which we last fall completed by the 10th December, we again set to work, composting cotton-seed, and ditch bank, stable manure and low-ground soil, and hauling again into the cattle and hog lots. This was kept up (with an occasional hindrance in packing cotton) by nearly all hands and teams, till we commenced ploughing, about the middle of January, with six double teams, using the Maryland or Patuxent plough, procured from Sinclair & Co., Baltimore.

After the ploughing season began, the remainder of our hands and teams continued to make manure in the different ways I have mentioned, till the 28th February, when we commenced the troublesome and laborious job of hauling out what we had collected during the twelve months past. We finished the work of hauling out on the 25th April, being near two months engaged at it, and according to our plan of manuring, one load for every twenty feet square, or 110 loads to the acre, we hauled out compost enough to put on 350 acres of land, or over 35,000 loads, (one-horse cart-loads, five bushels to the load.)

Beside this, we applied twelve tons of Peruvian guano to cotton, corn,

and oats. Some of the compost previously mentioned, had two hundred pounds of guano mixed in each acre-heap, so that, altogether, we have manured over 400 acres of land for the crop of 1854, at the rate of 110 loads to the acre.

Our crop consists of 220 acres of cotton, all manured; 225 in corn, 150 of it manured; 30 in oats, and 8 in sweet potatoes, manured. The cotton crop to date looks promising, (the weather at this time is, however, very unfavorable for the cotton plant, and a few days of it will alter the appearance of things.) The corn crop is backward and indifferent, and presents an irregular appearance, owing to the cold snaps the latter part of April, when much of it had to be ploughed up and replanted.

Having detailed to you clearly, I hope, our *preparations*, I will now tell you our calculations, and when the crops are gathered, I will give you and your readers the results, so that you may see how far I miss the mark. You must bear in mind that this is our *third crop* on Panola, and the process of making poor land fertile is the work of years, long years. The land we have now in cultivation, when we took charge of the farm in January, 1852, would have made, in my opinion, without manure, not exceeding 400 pounds of seed-cotton, or two barrels of corn per acre. Our calculation this year is to make 900 or 1000 pounds to the acre of cotton, and four barrels of corn, if an average season prevails.

I will try and recollect to prepare for your January number, the results of our operations for 1854."

Here are four hundred acres of land manured in one year, and a crop made beside. Now, how long would it require to clear 400 acres of such land as he cultivates, and put it in the condition to make the crop he calculates on?

More than one year, and after it is brought to the highest state of cultivation, the virgin soil would not produce exceeding 500 pounds of seed-cotton, and 20 bushels of corn, per acre. And after a few years of cropping, it would not produce near that amount, without manure. Here, then, is an illustration of the benefits of manuring that can not be disputed; and I could name many men in Edgecomb, who have brought about similar results by manuring.

I have seen a great many manure heaps, in my travels in the new and old world, but I never saw *manure piles* until I saw them in North-Carolina; and what did these piles do? They made old barren pine-fields, turned out as worthless, produce 20 bushels of corn, and 1200 pounds of cotton per acre. When I first saw those fields, I could scarcely believe my senses, and recognize them. I looked at the land and then at the cotton. The land looked as poor as ever, but the cotton looked like our black lime-land cotton, branching from the ground, spreading far and wide, and as full of bolls as persimmon trees, that matured early and opened well.

By the side of this cotton, now and then, I could recognize an old friend, a *sap-weed*, growing like a pine tree, all body and no limbs, and but little fruit, and that little maturing late, and much of it killed by frost. How is this, I asked? I was told the good cotton had manure in the drill, and the sorry cotton had none. Before the discovery of shell-marl there, a few years since, and the commencement of the manuring system, many of the Edgecomb lands were lying idle, and but a little cotton cultivated. Cotton culture was abandoned in a manner, because the lands and climate were not considered adapted to its production; but they have discovered that manure adapts both the land and climate to its culture, and Tar River and Pedee

are beating many of the cotton lands of Georgia and Alabama for making cotton. They have this advantage over us—no boll-worms or caterpillers to destroy their cotton.

A *little manure*, I venture to say, would change the production of many of our soils, and make our old fields here snowy with cotton. *Try it, stubborn farmers!*

T. N. Sorsby.

Forkland, Ala., 1854.

—*From Soil of the South.*

RAILWAY TO THE PACIFIC.

It is certain that such a road will be built—the only questions involving much uncertainty regarding the time and the route. It is in respect to the latter that we make a few suggestions.

With a given and limited amount of business, length of route is an obstacle to an undertaking, of most imposing magnitude. But where the length of the road is only proportioned to the amount of business, length is not an evil but a help. A long road with large business, is better property than a short one with little business. The expenses of conducting a road of fifty miles are much larger per mile, than those of a road of five hundred.

Routes on the seaboard are comparatively expensive. All large streams are to be crossed, and the bridges must be of an expensive kind. Where the track is parallel with the streams of the territory, the cost is essentially diminished.

Way business is one of the important elements which give value to a road.

Applying these principles to the Pacific Railroad, we shall be forced to certain conclusions, in reference to the several proposed routes to the Pacific. Let us look at them for a moment.

The most Southern route possible, necessarily contemplates the crossing of all the rivers in Texas, large and small, and where Spanish territory is entered upon, though the route is indefinite, there are, at the best, no advantages gained by pursuing the courses of rivers, for all run in the wrong direction; and though the streams themselves are small, the physical formations, the valleys, and the highlands, are all adverse. But how is it in the higher latitudes? Starting from St. Louis, the physical formation of the surface is entirely favorable. The Kansas, the Platte, the upper portions of the Arkansas, and some smaller streams, if required, furnish a natural route to the very foot of the Rocky Mountains. On the western slope, the Colorado and other rivers may be used with equal advantage. But look at the second point.

The extreme Southern route passes through a foreign state, not yet possessed of the higher forms of civilization, where the arts do not flourish, and can not so long as the government is what it is, and where, of necessity, the population is very limited and trade nearly nominal. But how is it in more northern latitudes? A westward course from St. Louis towards the State of Missouri, the Kansas territory, and Utah, a territory sufficiently large for four or five extensive States, consisting of excellent soil, well watered, and with a fine climate, and capable, of course, of sustaining an immense population. Besides, the materials for the road may be chiefly obtained in the vicinity of the route, in which respect it has a decided advantage over the extreme

Southern road. Hence, also, a third requisite is secured—a large way business.

In all routes, as stated in a previous article, the idea of profit must be regarded only in a somewhat distant future, but that future is as certain as a mathematical demonstration. To doubt this, would be as absurd as to doubt whether one of our genuine progress-men would refuse a capital farm when offered him for nothing.

But there is another consideration of no small importance. A road "ultra-Southern," must ever remain comparatively unimportant to all the States lying in higher latitudes. San Francisco, the Arkansas, St. Louis, etc., are all in the neighborhood of the 38th parallel of latitude. For the sake of this ultra-Southern connection, goods and passengers must be brought down some six hundred miles, or ten degrees of latitude, and then be transported back again, perhaps an equal distance, without an eastern progress of a single mile. There can be no roads branching towards the north, through New-Mexico, nor Texas, the direction of the streams and the necessary formation of the land utterly forbidding any such structures. The Mississippi is the first point from which any connections could be built uniting this with the more Northern roads.

On the other hand, the line of the main track through Kansas, Missouri, Illinois, etc., would be, and is, in fact, already to some considerable extent, connected by branches with every State in the Union, and without any considerable waste of travel. Georgia, the Carolinas, Virginia, etc., are already connecting themselves with the States of Illinois, Indiana, and Ohio, while way travel and freight will soon pay, if they do not already, all the expenses of the connecting roads.

If this is so, the upper route is the only one that can be successfully carried through. We would not, however, decide too hastily such important questions, but we throw out hints that can not be overlooked by those who may have the management of this immense interest, or who may be called upon to lend their aid in behalf of so great an enterprise.

Having thus expressed more fully the ideas suggested in our October number, we will lay before our readers a few statements, from an address by Thos. H. Benton, in reference to the character of the country crossed by the upper route, going to prove that the country near the latitude of 38° is "remarkably adapted for the construction of railroads, and that it is traversable in all directions." If this is so, we should consider these facts decisive on this question. On this point he says:

"I have some direct and positive testimony on this head, which the importance of the subject, and the value of the testimony itself, requires to be produced. I speak of the last expedition of Colonel Fremont—his winter expedition of 1853–54—and of the success which attended it, and of the value of the information which it afforded. He chose the dead of winter for his exploration, that he might see the worst—see the real difficulties, and determine whether they could be vanquished. He believed in the practicability of the road, and that his miscarriage in 1848–49, was the fault of his guide, not of the country; and he was determined to solve those questions by the test of actual experiment.

With these views he set out, taking the winter for his time, the west for his course, a straight line his object, the mouth of the Kansas for his point of departure, St. Louis and San Francisco the points to be connected. The parallels of 38° and 39° covered his course, and between these he continued to move west until he reached the Little Salt Lake—within three hundred miles

of the California line; after that, upon a slight deflection to the south, between the parallels 37° and 38°, until he entered California. This may be called a straight line; and so fulfills a primary condition of every kind of road, and especially of a railroad, where a speed of a hundred miles an hour may be as easily attained and as safely run as the third of that velocity in a road of crooks and curvatures.

Snow was the next consideration, and of that he found none on any part of the route to impede any kind of travelling. On the Kansas, the Upper Arkansas, and the Huerfano, he found none at all; in the Sand Hill Pass of the Sierra Bianca, none; in the Coochatope Pass, four inches! and none if he had crossed the day before; and that was the 14th day of December, corresponding with the time, and almost in view of the place, where he had been buried in snow five years before. This solved the question of snow in the passes of the mountains, and showed his miscarriage had been the mistake of the guide, and not the fault of the country. After that—after crossing the Rocky Mountains—the climate changes. A great amelioration takes place, which he knew before, and then fully experienced. The remainder of the route, as has been shown in the view of the country, may be said to have been found free from snow—a hundred miles at a time in one place without finding any; and when found at all, both thin and transient.

And that this was the common winter state of the pass, and not an occasional exception, has been shown by Mr. Antoine Leroux and others, and corresponded with his own theory of snow in the passes.

The Sierra Nevada was the last range of mountain; and there not a particle of snow was found in the pass which he traversed, while the mountain itself was deeply covered. And this disposes of the objection of snow on this route, so formidable in the view of those who have nothing but an imaginary view of it. Smoothness of surface, or freedom from abrupt inequalities in the ground, is the next consideration, and here the reality exceeded the expectation and even hopes, and challenges incredulity.

Here is a section of the route, above seven hundred miles long, being more than half the distance to California, in which there is no elevation to arrest the vision—in which you might look down in the wide distance, (if the eye-sight was long enough,) and see the frontier of Missouri from the mouth of the first pass in the first mountain—being more than half the length of the road. This would do for a start. It would satisfy the call for a fair surface at the commencement. This first pass is called the Sand Hill, or Robidoux, through which Fremont entered the valley of San Luis; and the way so low and level as to be seen through. And through that valley, and its continuation, (the Sahwatah,) to the Coochatope, the ground is so smooth as so present no exception to its level but the natural curvature of the earth.

More than forty loaded wagons went through it in the summer of 1853, twenty of them guided by Leroux for Captain Gunnison, the rest by emigrant families, without guides. But more than that—the buffaloes have travelled it always.

This is enough to show that the Rocky Mountains may be passed without crossing a hill—that loaded wagons may cross it at all seasons of the year. In a word, there is no difficulty about passes; the only bother is to choose out of so many all so good, both in themselves and in their approaches. This is enough for the passes; with respect to the whole mountain region, and the difficulty of going through it, and upon different lines, we have also the evidence of facts which dispense with speculation and assertion. That

region was three times traversed, and on different routes, by Messrs. Beale and Heap, in the summer of 1853.

It happened thus: When they had reach the east fork of the Great Colorado of the West, and were crossing it, they lost, by the accident of an overturned canoe, their supply of munitions, both for the gun and the mouth, and were forced to send back to the nearest settlement for a further supply. That nearest settlement was Taos, in New-Mexico, distant three hundred and thirty miles; and that distance to be made upon mules, finding their own food, which had already travelled, on the same condition, one thousand miles from the frontier of Missouri; and these mules, (thus already travelled long and hard, without other food than the grass afforded,) now made the double distance at the rate of forty miles a day, still finding their own food, and on the return, bringing packs on their backs. This performance must stand for a proof that the whole mountain region between the Upper Colorado and the valley of the Upper Del Norte is well adapted to travelling; and that in a state of nature; and also well supplied with nutritious grass; and this clears us of the Rocky Mountains, from which to the Little Salt Lake it is all an open practicable way, not limited to a track, but traversable on any line. Loaded wagons travel it in a state of nature. The valley of the Colorado is either level or rolling; the Wahsatch and Anterria ranges are perforated by incessant valleys; and from the Little Salt Lake to the Great Sierra Nevada, as explored by Fremont last winter, the way is nearly level—a succession of valleys between the mountains—and terminated by a superb pass, debouching into the valley of San Joaquin.

This completes all that is necessary to be shown in favor of the smoothness of the way—its equality of surface, throughout the whole line; although it attains a great elevation, and lands you in California, in the rich and settled valley of San Joaquin, proximate to the southern end of the gold mines. Not a tunnel to be made, a mountain to be climbed, a hill to be crossed, a swamp to be seen, or a desert or movable sand to be encountered in the whole distance."

We shall be glad to publish any suggestions, on this subject, from any quarter.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

CROPS IN VIRGINIA.

MESSRS. EDITORS: It is several months since I last addressed you. Bleak winter has driven me within doors, and now, with the mercury standing at 16° Farenheit, I seat myself, not to give you an essay on agriculture, but to write of things past, present, and in prospect, in our beautiful valley.

This portion of our valley has not suffered from drought so much as the counties below us. The crop of wheat in the upper part of our county was a full average, and of fine quality. The counties of Augusta, Rockingham, Shenandoah, Page, Jefferson, etc., if I am correctly informed, fell short one third to half crops. The corn crop was equally short, and taking the valley range, will not average half crops. Grass was also very short. Upon those crops the graziers are dependent, and as a necessary consequence, there will not be fed in the lower part of the valley over one half to two thirds of stock cattle usually wintered there. It is computed that last year some 40,000 head of

stock cattle were driven down the country. This year about 28,000 passed through our county, and several thousand of them were driven back for want of a market. It is fair, however, to presume, that the stock on hand this year in the lower part of the State is better than that of last year, with much less to feed them. For some weeks past, many lots of very fine beeves have been passing down to the Baltimore market from the counties of Botetourt, Roanoke, Wythe, Montgomery, Pulaski, etc., etc., which counties are famed for the finest cattle raised in Virginia. The Cloyd's, Kent's, Crocket's, with many other gentlemen in the south-western part of the State, are celebrated for their fine stock. Many of their beeves would average net 1000 lbs., finely fatted, and command the highest prices. There is also much fine beef driven from the counties of Rockbridge and Augusta, with the entire range of valley counties. Last year every description of cattle was high and in great demand. This year there is little inquiry, and prices for stock-cattle have fallen off from one fourth to one third, and, notwithstanding every description of produce is high, there appears a pressure in money matters. Speculation has run too high. Time will bring things right. The price of bread-stuffs has ruled high all season, contrary to my expectations, and from present indications, will continue to do so till spring, and it may be till the coming harvest. Your canals are, I suppose, now closed with ice; your supplies will be cut off from the West. The surplus here is small, and owing to the continued dry weather, and now the freeze, the stock of flour on hand must run short; and I am deceived if prices do not continue to go up. You may rely on it. The stock on hand here is inconsiderable. The high prices heretofore have induced farmers to push off their stock as fast as they could get it ground. I own a Merchant mill. My stock on hand will be out before Christmas, and I do not know where I can buy 1000 bushels of wheat. I hear that this is the case with the mills around me. Wheat commands in the interior $1.50 per bushel; corn, 70 to 75 cents, and in some places $1; oats, 45 cents; rye, 75 cents; all scarce, and in demand. Pork worth $5 to $6 as in quality. Should the winter prove severe, I fear there will be suffering before grass comes again. The stocks of cattle, horses, hogs, and sheep are about as usual, with less to feed them. There has been an unusual number of sheep driven down the valley the past season, from the western part of the State, from Tennessee, and the mountainous parts of North-Carolina. They were mostly a common article, bought at an average of $1 per head to $1.25, and sold at $1.75 to $3.50; 40,000 were supposed to have been driven through our county. It is a matter of surprise that the farmers of East-Tennessee, and the northern portions of North-Carolina do not pay more attention to stock raising. They send in hordes of things here—two, three, four, and five years old, remarkable only for stag-heads and horns, with bandy legs, of small bone—any thing but comely animals. Our good farmers don't like to buy them, and will not when they can do better. One of Kent's fine beeves at the same age, is worth two of them. They are driven mainly to Eastern Virginia, and generally at four years old fatten well, but grow but little. There may be exceptions, and no doubt are, but I speak of this as applying to most of the cattle driven from East-Tennessee, and the border of North-Carolina adjoining.

I informed you some time since, that we were building a Branch Canal from the James River and Kanawha improvement, a distance of twenty miles. We have completed that work to within six and a half miles of Lexington. Owing to the pressure on the money market, our work is now progressing slowly; we are dependent for funds for the completion of the Canal

on bonds guaranteed by the James River & Kanawha Co. The payment of those bonds is based upon the tolls over the entire line on produce passing over our Canal. First paying the James River Co. $5000 per annum. It is computed that the surplus tolls will pay principal and interest in thirteen years from this date. From an experience of one year's business, we do not hesitate to say that an investment in those bonds is equal to Virginia State stocks. The interest will be paid semi-annually, and the redeemed within the next thirteen years. Last year the tolls amounted to near $16,000, and they will continue to increase as the canal is completed. We want capital here to occupy some of our fine sites for water power. Can you not send out some of your surplus funds, and energetic citizens, to build up our waste places? We want furnaces, forges, and factories. Much of the raw material is here. We lack capital to make it available.

Your obedient servant, etc., H. B. JONES.

Rockbridge Co., Va., near Brownsburg, Dec. 5, 1854.

P.S.—Mercury down to 16°; at sunrise, 22°; at 4 P.M., and at 5 P.M., 19°; wind high for two days. The night will be cold. 6th, mercury 17°.

CORN THE STAPLE CROP OF OHIO.

MR. MANSFIELD, in an address to the Highland County (O.) Agricultural Society, at its late Fair, thus speaks of their great staple, and the necessity for improvement in its culture:

"In this State, and in the whole Valley of the Ohio, Indian corn is the most important staple. In the five States of Ohio, Kentucky, Illinois, Indiana, and Tennessee, are raised 280,000,000 bushels of corn—one half of the whole raised in the United States, and three times as much as are raised in the same States of wheat, oats, barley, and potatoes, together. Corn is, therefore, the great staple of the Ohio Valley; and if we can improve its culture, we add more than in any other way to the products of agriculture. Is that impossible? In examining the statistics of this State you will find some facts bearing strongly on this point, and quite startling to the curious inquirer.

We find, *first*, that the *average product per acre* is 37 bushels, namely, 1,664,429 acres, producing 61,171,282 bushels; the highest being 50 per acre, in the counties of Butler, Warren, and Fayette; and the lowest 20 bushels, in the counties of Huron, Wayne, and Williams.

We next find, by turning to the proceedings of agricultural societies, that 150 bushels per acre have been repeatedly raised, and that 100 bushels is no uncommon crop. Thus we have two facts worth consideration, the sum of which is, that *the average corn crop of Ohio is only one fourth of what it might be under high cultivation, on the same breadth of land.* Is this a state of things that ought to exist? But some one will ask in the popular language, Will this superior cultivation *pay?* Will superior cultivation pay its costs? If it will *not*, your agricultural societies ought not to exist. No premiums should ever be offered, and you should contented to let dock, thistles, and iron weed grow where they will, and leave nature alone to raise your crops. Why, gentlemen, it is only on the supposition that superior cultivation *is* valuable, that you attempt any agricultural improvement.

But it is not to be denied, that in the Pioneer State, in the period when

lands were clearing up, it *was* the doctrine, that nature should be left to do the work of growth; for lands were cheap and labor dear. But Ohio has passed that period—at least as regards farms. Farming land is worth $20 per acre, on an average, and there is too much capital in land to lie idle. The time has come for high cultivation, the time has come when it will pay; when, if rightly applied, *culture* put on land will pay better than any other species of human labor."

ROTATION IN COTTON-CULTURE.

The richest soils, if not properly cultivated, will lose more or less of their fertility. Every one of the older States, north and south, is suffering from this depreciation in the value of their soils. At the same time, it is true that there is no necessity for suffering such a state of things to exist, and it is now in the power of the landholder, everywhere, to improve the condition of his lands, and that, too, without any immediate and excessive expenditure. The following is the substance of a system of rotation by which the impoverishment of the soil is effectually prevented, which has stood the test of several years of practice.

One hand is allowed to every twenty acres. The land is divided into four parts. Grade and ditch as circumstances may require. Next, allot five acres to each hand in cotton, ten acres in grain, and let five acres lie in fallow. Plant cotton on the same land once in four years, and always on fallow land, with a dressing of five hundred bushels of compost or stock-yard manure per acre, spread on the land broadcast, and incorporated with the soil uniformly in the process of bedding out the rows. The residue of the cotton-stalks, leaves, burs, blooms, and limbs, with the seed, except for planting, are all returned back to the same land where they grew. Upon this land the next year plant corn, manuring it with cotton-seed. But to the corn crop, the most important on the plantation, add two acres of the land which was in corn last year, thus giving seven acres in corn to each hand. On the other three acres of that portion that was in corn last year, sow small grain, which upon land thus treated will furnish a sufficiency of oats, rye, and wheat, for the wants of the plantation. Then we have lying in fallow for the next year's cotton crop the three acres that were in small grain last year, and two acres that were in corn.

The following reasons for commending this course we give as set forth by Dr. Cloud in the *American Farmer:*

"In the first place, it embraces all the conditions necessary to sustain the cotton-planting interest within itself, independent of external or foreign aid. To this feature I think there can not be too much importance attached. Again: the several crops succeed each other to better advantage, both as to their culture and healthy growth, than in any other way that we have seen or attempted. It may not be generally understood by planters from practice, because it is not a common practice; indeed, it is of the rarest occurrence, how well cotton grows after one year's rest or fallow. I conceive it to be, in its healthy, vigorous growth, and exemption from insects, more like growing cotton on fresh land. Nor will this be difficult for any planter to comprehend, when he recollects that on the fallow I spread five hundred bushels per acre of good stock-yard compost, or its equivalent.

I am sure I shall have no difficulty in persuading any planter that corn grows better, bears better, and is less trouble to cultivate after cotton than after any other crop. So well, indeed, does it do after a crop of cotton that has received a dressing of five hundred bushels per acre of manure, that it is yet a matter of uncertainty with me, after twelve years' experience, whether or not a good corn crop is not more certain without than with the seed; and if we have drought it is certainly best not to use the seed on corn thus treated. Then we have the seed to add to our compost heap for our cotton. Then again, the effect of the corn and small grain crops on the land being about the same, I prefer placing the small grain after the corn, as it does better after corn than corn does after it. After the small grain, the land lies one year in fallow. I have a theory about this four years' shift and one year in fallow, in regard to its curative influence upon the diseases of the cotton-plant. Of course I can not go into its explanation here, but I give it as my opinion that if the same land throughout the country was planted in cotton but once in four years, it would prevent the insect of rust; I am sure it would of lice, and I think it altogether probable it would do much toward relieving it from the injury of the boll-worm.

Under this treatment the plantation is every year improving. From the extent of pasturage which it affords, and the large amount of corn raised on the plantation, an average of two hundred and fifty bushels per hand, there will be no manner of difficulty in raising all the stock—hogs, mules, and cattle—that are needed on the plantation. It has been objected to this system, that in the extent of pasturage afforded, prairie and clay land would become too much trod by the stock, causing such land to run together and break up cloddy. I am confident the objection is unfounded, as the great object of the system is to accumulate on the land the largest possible amount of vegetable matter, which, while it keeps the land loose and friable, contributes so largely to the luxuriant and healthy growth of cotton. These objections, that fail to stand the theory and science of agriculture, fall to the ground as impotent and futile when we examine the same system (in principle) in successful practice in the States of Tennessee, Kentucky, Ohio, etc., on calcareous clay lands, raising by pasturage, etc., not only mules, horses, hogs, and cattle for home consumption, but for all our cotton planters. There is an incompatibility here certainly. The only precaution necessary is to prevent stock running on the land while wet with rainwater standing on it.

There is nothing more easy than to account for this false alarm among cotton-planters. See the sedulous care, if you please, with which they have drained the vegetable strata of their fields for the last forty years; each row is a perfect drain, not of water alone, but of vegetable mould, the life's-blood of the land; the cotton and cornstalks generally burned; thus denuded and leached, it is not surprising that the hoof of a hungry cow should poison it!

It is further objected, by those otherwise approving the system, that it will not make cotton enough; that it does not lot sufficient land to secure every year a full crop of cotton. To this objection we simply oppose at first this fact. No man in this country, on the same quality of land, has realized from 1844 to 1853 inclusive, to the same proportion of hands which I have, notwithstanding I have been experimenting all the time. If I have not made as many bales of cotton, which is improbable, I have raised that which cotton had to supply necessarily. This is obvious in the substantial improvements on the land, and its increased value, at least five hundred per cent; not that I could simply sell it for that much over and above its cost twelve years ago,

but it is its absolute annual production. Nor does it possess any artificial advantages of railroad or city value, as land in sight of it of the same quality, and just as valuable in 1843, under the "kill and cripple policy" of the country, sold last year at less than $6.25 per acre."

ARTIFICIAL MANURES.

We have often alluded to the strong temptation to fraud in the manufacture of various fertilizers, and have advocated the policy of sworn examiners to mark every box and bag of it according to its merits. There is no force whatever in the pretense so shamefully urged by some of those who are interested, that self-interest will lead them to be honest. Such considerations are no more effective with the makers and sellers of phosphates than with makers and sellers of watches, or of any other article. Selfishness is the most miserable motive to be honest that a man could devise, while fraud can seldom if ever be detected by ordinary means. Those who rest their own character on such a plea, ought not to be trusted beyond the length of a halter.

We are led to refer again to this subject, by noticing some very conclusive statements in reference to the subject in a recent *Country Gentleman*, and we heartily commend the advice which is given at the close of the extract by our learned and judicious brother:

"From the Transactions of the Highland Agricultural Society of Scotland, we learn that a Mr. G. W. Hay, of Roxburghshire, being desirous of trying experiments with various manures, put himself in communication with a dealer or dealers in 'agricultural manures.' Among the substances to be employed by Mr. Hay were super-phosphate of lime, nitrate of soda, phosphate of soda, sulphate of potash, phosphate of magnesia, sulphate of ammonia, and muriate of ammonia. When the parcels of chemicals furnished by the respectable people of whom they were bought, came to be examined, the nitrate of soda was found to contain only 56 lbs. of that substance in every 100 lbs.; the phosphate of soda only 6 lbs. in the 100 lbs.; the sulphate of potash 60 lbs.; the sulphate of ammonia not quite 9¾ lbs.; the nitrate of potash (saltpetre of commerce) about 11½ lbs.; the phosphate of magnesia 2¾ lbs. (!!); and the muriate of ammonia 54 lbs. only. As to the super-phosphate of lime, as it was called, it contained only 4 per cent of soluble phosphate of lime; the other 96 lbs. consisting of water, gypsum, siliceous matter, some kind of free acid, and insoluble phosphate of lime, a perfectly useless substance.

When Mr. Hay ventured to complain of the fraud thus practised upon him, he was coolly informed by the dealers that they could not think of taking their rubbish back. They stated that what he had bought of them was '*the usual quality for agricultural purposes*,' and contained 'the quantities suitable for plants.' That is to say, in the opinion of the dealers, the quantity which is *suitable for plants* is 2¾ lbs. in every hundred of phosphate of magnesia, 9¾ lbs. of sulphate of ammonia, 4 lbs. of super-phosphate of lime, and 6 lbs. of phosphate of soda. This insolent answer is pretty good proof that some, perhaps most, dealers in 'agricultural manures' take it for granted

that the agricultural community are easily imposed upon, and may be cheated and fleeced to almost any extent.

By every case of detection and exposure of such frauds, farmers will be more and more persuaded of the expediency of manufacturing their fertilizing substances, as much as possible, at home. They will turn their attention more and more to saving, and putting into available or usable forms, all the urine and excrements upon their premises; to saving their barn-yard manure from the wasting influences of exposure to winds, and rains, and sun; to composting; and to the manufacture of chemical manures under their own eye. That this latter can be done to same extent is evident from the directions given in the last volume of *The Country Gentleman* in regard to the composition and domestic manufacture of what is known in Great Britain by the name of 'Economical Manure.' By every case of exposure of such frauds, the number will be diminished of those who purchase annually various quantities of guana, super-phosphate of lime, poudrette, etc., while the guano of their own hens and all the animal excretions on the premises are allowed to go entirely to waste."

A FINE YIELD OF CORN.

Mr. John Q. Hewlett, who has a farm about four miles from this city, on the Frederick road, has just measured the corn gathered from three acres of a field of eighteen acres. The corn was heaped and shaken twice, in accordance with the old rule; twice before and once after Christmas. The product of the three acres was 46 barrels, or 15⅓ barrels, or 76⅔ bushels, per acre.

The field had heretofore been improved by a liberal dressing of animal manures, the ploughing in of a green crop, and the application of one hundred bushels of oyster-shell lime, and had been set in timothy. Last year, owing to the lowness of the ground, and the thorough manuring which it had previously received, a heavy second growth, or after-math of timothy, grew up, fell down, and, by the force of its smother, destroyed the timothy, which was followed by a luxuriant crop of blue grass. Last fall the blue grass was ploughed in some eight or ten inches in depth, and the inverted soil left exposed to the meliorating influence of the winter's frosts. This spring the field was rolled, harrowed until a perfectly fine tilth was obtained, and then planted with corn, *without any manure.* The result of the product of three of the eighteen acres we have already detailed, and we will add that it is estimated that the remaining fifteen acres will yield ten barrels on an average to the acre.

Now, what think you enabled this field to yield so luxuriant a crop of corn during the past season of drought? Why, the thorough system of improvement to which it had been subjected some years since; to the application of concentrated organic manures; to turning in green crops; to liming and to deep ploughing, thorough pulverization and judicious culture of the corn.

The crop of timothy cut in 1853 yielded more than two tons to the acre; its produce of corn in 1854 we have already stated, and yet this field in 1849, when the farm came into its present owner's possession, would not have brought more than four barrels of corn to the acre!

Can any one, after this plain statement of facts, doubt the policy of

thoroughly improving land? Can they doubt that true economy is thereby conserved? Can they doubt that money thus laid out will not came back—not only the principal, but with a heavy interest? We think that no one who is capable of forming a correct opinion can entertain the slightest doubt upon the subject. We know that every dollar judiciously laid out in the improvement of land will pay, and pay well.—*American (Baltimore) Farmer.*

HOME MANUFACTURE OF POUDRETTE.

The contents of privies, commonly known under the name of night-soils, furnish exceedingly powerful manure when properly manufactured; and under right management, the process will destroy all the effluvia arising from those deposits, and render the closet entirely inoffensive.

When a reservoir or small stream of water is at command, so that a current may be made to sweep through several times a day and carry off the contents into the manure-yard, or into a covered bed of peat, or a compost heap, this forms perhaps the most perfect mode of removal. An essential requisite, however, is freedom from the influence of frost, and the closet should therefore be connected with the dwelling where the reservoir of water may be kept from freezing, and from which there should be an underground channel of considerable size and slope. We have known all this to be perfectly accomplished by means of a lead cistern in the upper story, which was kept supplied with rain-water at all times from the broad roof of the house, and which was sufficient beside for baths, washing, and all other domestic purposes.

When a current of water can not be used, the next best contrivance is to form a tight box, of matched pine plank, and give it two or three coats of coal-tar, so as to render it durable, and proof against moisture and warping. It is to be placed on two runners like that of a sled, made of plank or scantling, to the forward end of which a chain and iron hook are attached, so that it may readily be drawn off by a horse. This box must be of such a size as to fit a cavity made on purpose under the building.

The next thing is to provide a supply of some efficient deodorizing substance. Dry saw-dust or thoroughly dried peat does tolerably well, with the occasional addition of ashes and powdered charcoal. Charcoal dust alone is much better, and if daily applied in small quantities, will nearly destroy all smell; but it is absolutely essential to success that a full supply of this material be kept near at hand in a large box or hogshead in a shed or outhouse, where it shall be always dry and in a condition to apply every day, summer and winter. Animal charcoal is still more efficient than common charcoal, and may be made to form a portion of a material made as follows: Make a pile of peat, turf, old straw and brush, mix with tanner's shavings and broken bones; let the pile become dry enough to burn, and then cover it with sods and set it on fire. It should be suffered to burn with a slow, smothered combustion, so as to char without consuming the materials. When the process is completed, the whole heap, including the turf covering, should be well mixed together and broken fine, and then placed in a large box under shelter, for daily use. Any portion of clay introduced by means of the turf, and well dried, forms a powerful absorbent of fetid matter. As often as may

be convenient, a horse is hitched to the hook and chain, and the whole is drawn off into the barn-yard, where it is quickly discharged by turning the box upside down; and after covering the bottom and sides with the prepared material already described, it is replaced as before. The strong manure thus obtained, will, if well mixed, possess but little odor and may be used directly, or may be mixed with common manure in the compost heap. Durable plank should be placed under the runners, to prevent their sinking into the earth, and enable the horse to start the box easily. It is said that those who are employed to obtain the materials for the wholesale manufacture of poudrette, throw in, before commencing operations, a few quarts of a strong solution of copperas, which immediately neutralizes effluvia, and adds to the value of the manure.

Since the above was written, we have received the following:

"The different modes of saving as well as making manure, very properly engage the attention of agriculturists to a great extent. There is one mode of saving manure, however, which is very much overlooked. The farmers generally, in building a 'palace' for the accommodation of the household, either dig a pit to a great depth, or a shallow one with a movable building, to be removed as often as the pit becomes filled. In the former case, there is fitted up a complete nuisance (after a year's existence) and a trap to frighten mothers and nurses. The latter is a nuisance from the beginning, and a subject of complaint almost everywhere. The plan I have adopted is simple and cheap—leaving the 'palace' as sweet as any chamber in the house, and productive yearly of a tank of manure worth twenty-five dollars—a species of poudrette, I venture to say, more fertilizing than any that can be purchased.

I have sunk a tank or pit, ten feet square and four feet deep, and lined with plank; stone or brick walls would perhaps be better. Upon transverse beams is built the 'palace,' five feet square. From the kitchen and wash-house, I have underground sewers emptying into this tank, through which all the slops of every description pass. The seat is fixed on hinges so that the whole top may be opened up, and at this opening is deposited all the dirt accruing about the house including the ashes from two fires. The dirt and ashes absorb all the slops and moisture, and prevent the slightest unpleasant smell. This tank may be filled once or twice a year, and each filling would be worth to the garden the sum before mentioned. It is astonishing that this is so much neglected by persons even who know the value of manures, and can appreciate cleanliness and convenience.—*Country Gentleman.*

CHARCOAL A DISINFECTING AGENT.

We have often made suggestions on the use of charcoal in stables, closets, etc., and copy some experiments below, made by an English gentleman, and reported in the London Journal of the Society of Arts. The account is as follows:

"My attention was particularly drawn to the importance of charcoal as a disinfecting agent by my friend John Turnbull, Esq., of Glasgow, Scotland, the well-known extensive chemical manufacturer. Mr. Turnbull, about nine months ago, placed the bodies of two dogs in a wooden box, on a layer of charcoal powder a few inches in depth, and covered them over with a quan-

tity of the same material. Though the box was quite open, and kept in his laboratory, no effluvium was ever perceptible; and on examining the bodies of the animals at the end of six months, scarcely any thing remained of them except the bones. Mr. Turnbull sent me a portion of the charcoal-powder which had been most closely in contact with the bodies of the dogs. I submitted it for examination to one of my pupils, Mr. Turner, who found it contained comparatively little ammonia, not a trace of sulphuretted hydrogen, but very appreciable quantities of nitric sulphuric acids, with acid phosphate of lime.

Mr. Turner subsequently, about three months ago, buried two rats in about two inches of charcoal-powder, and a few days afterward the body of a full-grown cat was similarly treated. Though the bodies of these animals are now in a highly putrid state, not the slightest odor is perceptible in the laboratory.

From this short statement of facts, the utility of charcoal-powder, as a means of preventing noxious effluvia from churchyards, and from dead bodies in other situations, such as on board a ship, is sufficiently evident. Covering a churchyard to the depth of from two to three inches with coarsely powdered charcoal, would prevent any putrid exhalations ever finding their way into the atmosphere. Charcoal-powder also greatly favors the rapid decomposition of the dead bodies with which it is in contact, so that in the course of six or eight months little is left except the bones.

In all the modern systems of chemistry, such, for instance, as the last edition of Turner's 'Elements,' charcoal is described as possessing anti-septic properties, while the very reverse is the fact. Common salt, nitre, corrosive sublimate, arsenious acid, alcohol, camphor, creosote, and most essential oils, are certainly anti-septic substances, and therefore retard the decay of animal and vegetable matters. Charcoal, on the contrary, as we have just seen, greatly facilitates the decomposition of any organic substances with which it is in contact. It is, therefore, the very opposite of an anti-septic."

ILLUMINATION UNDER WATER.

That science is progressive is apparent on all sides. Among other subjects of great interest, this has received its share of attention. The November number of the American Journal of Science and the Arts contains interesting statements on this subject. We are informed that at the Lake D'Enghien, M. Duboscq, the successor of Soleil, performed an experiment of this kind before many competent observers. The electrodes of carbon were placed in a glass globe, being connected with one of Duboscq's regulators, which communicated with the battery by a copper wire covered with gutta-percha. The globe, submerged to the depth of sixteen and one half feet, spread light over a circle of sixty-six feet diameter, and it remained constant for two hours, after which the carbon required replacing.

The idea of this process was suggested by an agent of a company that had been engaged in exploring the bottom of the Mediterranean where the battle of Navarino took place. The diver usually remained beneath the water three quarters of an hour, after which he came up to breathe and rest; his light was an oil lamp placed on the head of the diver, and fed with air proceeding from his respiration, whence it was in a variable current, and was

often extinguished, requiring him to go up and relight. Duboscq's arrangement was devised to avoid these inconveniences. It is made light, so that the diver may carry it in his hand; and at the same time it is strong, and well secured hermetically, to resist a pressure of one hundred and eighty feet of sea-water. It consists of a cylinder of strong glass secured to a brass foot, and surrounded with a gutta-percha sack. The light passes out through a large plano-convex lens, the convexity being inward, the focus being so arranged that the rays escape nearly parallel. As the lamp is movable, the diver walks about with it, and places it where he wishes to make a search; and as it is only necessary to bring the electrodes near one another to light it, the diver need only to turn a small screw to continue the light for two hours, which is more than twice as long as he can remain at the bottom.

This beautiful invention supplies a want which has always been felt by persons engaged in operations with the diving-bell. A vast quantity of property now lying on the bottom of our large rivers, bays, and lakes, may be recovered by the use of submarine armor and these electric lamps. In seeking for nuggets of gold in the deep pools of streams in California, these lamps may also be advantageously employed. They will likewise materially aid the engineer in arranging the foundation of works that are to be erected in deep water. In recovering the body of a person who has been drowned, they will be eminently useful; in short, the introduction into use of this submarine lamp is another of the beautiful contributions that science is constantly offering to man for the promotion of his happiness and prosperity.

SUBSTITUTE FOR RAGS IN PAPER-MAKING.

Our exchanges from the Atlantic States contain favorable notices of the newly-discovered paper plant which grows spontaneously and abundantly in Canada. We do not entertain a doubt that this plant, which appears to have as many *aliases* as a pickpocket, will supply the material for the manufacture of paper that will surpass in quality and economy that now made from rags. In Canada, the name commonly given to the plant is "Cudweed," another is "Life-everlasting." In the notice we now give, which is taken from a Savannah paper, the botanical name is said to be "Gnaphaluno." The writer of this notice, as will be seen, speaks very favorably of this plant as a substitute for rags in paper-making:

"It is said that the experiment to make paper out of an American plant called 'white top,' or 'immortelle,' has been successful. The botanical name is Gnaphaluno, and the paper is therefore called 'gnaphalic paper.' The plant is very abundant in Canada. The paper is glossy, smooth, and thin, and evidently much stronger than that kind in the manufacture of which cotton is so largely used. The stalk as well as the flower of the plant may be employed, but from the white silky flowers alone a finer and whiter article can of course be produced. The manufacturers assert that, without taking into consideration the difference of the cost of materials, paper may be made from this plant at 12½ per cent less expense than rags. The adhesive qualities of the plant are such that in the manufacture of the paper no animal matter need be used, and a good surface is obtained without sizing."

We find the foregoing in the *Louisville Journal*. We do not know about

the *aliases* spoken of, except so far as some compositor or proof-reader is responsible. The true name is GNAPHALIUM, and it grows "everywhere." The *luno* must have been contrived by some moon-struck typo. The common, or English names of plants are never reliable. Every locality has its own nomenclature. The "Ladies' Slipper" of one region, is "The Toad Flax" of another, and so on.

We have not the confidence of our learned brother at Louisville, in the matter of substituting any thing for *flax* in the manufacture of paper, but quere whether an economical process may not perhaps be devised for making paper from the vegetable itself, without a previous operation for converting it into *flax*, or still more into a web. Perhaps, too, something may be accomplished by mixing raw cotton and prepared flax together.

NEW PLAN OF BREAKING-IN HORSES.

A NEW system of breaking-in horses, by means of a very few lessons, and so as to preserve all their precious qualities, has come into use, and what is singular is that the author of it is a lady, named Isabelle. Having a great liking for horses, Madame Isabelle some years ago began studying the different systems employed in breaking-in horses, and came to the conclusion that they were all more or less defective. She then sought for a plan of her own, which should render the horse more tractable, by developing its intelligence; and she succeeded in discovering one so perfect that the most restive horse is reduced to obedience in a very short time, and without the slightest ill-treatment. Her plan, as is almost always the case with things really useful, is very simple. She begins by making the horse carry his head high, and perpendicularly, whereby she prevents the weakness caused by the constant binding of the neck, gives free play to the muscles in the neck, and allows full action to be exercised over the mouth. Then she places on the horse a surcingle, surmounted by an iron rod about fifteen inches long, which is bent about four inches forward at the summit. On each side of the rod are placed four rings, destined to receive the reins according to the height that may be desired. The horse soon gets accustomed to this check, and it exercises a great moral effect on him. He places his head in such a manner as not to suffer from the bit in the mouth, and thereby soon gets accustomed to being held in hand by his rider or driver. The surcingle also promptly accustoms him to adopt the best movements, and to advance when desired without offering any resistance. The breaker-in remains at the left of the horse, and is armed with a whip with a spur in it. After forming her system, Madame Isabelle went into Germany, and practised it with marked success on horses belonging to Prince de Lichtenstein, at Vienna. From Vienna she went to Russia, and there stopped two years. In the course of that time she rendered completely docile all the most restive horses of model cavalry regiment at St. Petersburg, as well as those of the Emperor Nicholas. Recently she returned to France, and, having explained her plan and stated its results to the Minister of War, she was, by the special direction of the Emperor, who was consulted, authorized to practise it on a number of young horses of the regiment of guides, and with an equal number of recruits who had recently joined the regiment. The lessons were given under her direc-

tión at the riding-school of the Ecole Imperiale d'Application d'Etat Major After the fifteenth lesson the horses manœuvred with the tranquillity and precision of old troop horses. A few days ago, Colonel Fleury, who commands the regiment, manœuvred the horses and recruits, and every one of the usual cavalry movements was admirably executed.—*Mark-Lane Express.*

GALLS ON HORSES.

Some horses are more predisposed to galls than others, but even the most liable to injury in this respect may by care be kept perfectly sound. Bad harness is the great cause of galls. In order to save a few shillings in re-stuffing an old collar, getting camel's-hair pads, or, perhaps, a new collar, many a valuable horse has been materially injured, and ever afterwards particularly liable to sore shoulders. The collar should be frequently examined, inasmuch as it is very likely to become hard and lumpy. A little pounding will generally remove the difficulty, and render the collar soft. If the horse is known to be predisposed to sore shoulders, camel's-hair pads should always be used. Heavy and unsteady work is also a frequent cause of galls. A man unused to labor can easily blister or gall his hands, while he who labors habitually suffers no inconvenience. So it is with horses; they have, perhaps, done little or nothing during the winter, and, when the busy season comes on, they are put to "breaking up," or other heavy work, and, as a natural consequence, their shoulders are galled. Could any other result be expected? Light work, till their shoulders are hardened, would be a more humane and profitable course.

Bathing with salt and water is a good thing to harden the shoulders. Some prefer to bathe the shoulders in the morning, previous to going to work; but we think it is better to do it at night, and wash it off with cold spring water in the morning. Otherwise the particles of salt are apt to adhere to the collar or to the hair, and act somewhat as would fine sand in a person's boot. Of course, the poor horse is allowed to rest his weary limbs on the Sabbath; for, as experience has fully demonstrated, neither man nor beast can labor seven days in the week with impunity. On Saturday night, therefore, the shoulders should be thoroughly bathed with a saturated solution of salt and water, washing it off on Monday morning before commencing work. These precautions are particularly necessary where the skin exhibits tenderness, or becomes knotty or thickened. A few minutes' labor, night and morning, is all that is required, and it can not be better applied.

In case of actual sores, or where the skin is broken, it is desirable that the horse be allowed to rest a few days; but if this is impossible, the collar must be so padded as not to touch the sore. It would seem essential that the sore be covered in some way, so as to keep out the dust and prevent flies, from troubling it. We never found any thing answer the purpose in this particular. If any of our readers have been more fortunate, we should like to hear from them. A solution of alum is good to bathe the sore with, but we prefer white vitriol, (sulphate of zinc.) We know of nothing so cooling and healing. A tea-spoonful should be dissolved in a pint of water, and the sore be kept constantly moist with it. For this purpose, it will be necessary to take a bottle of it into the field with you, and to keep a moistened rag on the sore all the time. Act on these hints, and your teams shall praise you.—*Rural New-Yorker.*

ANATOMY AND PROPAGATION OF MOSQUITOES.

At a recent meeting of the Society of Natural History, in Boston, Dr. Durkee, of that city, exhibited under the microscope the rostrum or sting of the common Mosquito, (*Culex pipiens.*) The Doctor remarked that one of the most remarkable features in the anatomy of the mosquito is that the parts which constitute the mouth are elongated, so as to form a beak extending horizontally, like that of some birds. The beak or sting is about half the length of the body, and to the unassisted eye appears to be very simple in its structure. When examined with the microscope, however, it is found to be composed of seven different parts, which are comparatively stout on one edge. These parts vary in length, and can be separated from each other without much difficulty. They are broad at the upper part, where they are united to the head, and they gradually taper to a point. One of the parts is a tubular canal or groove, in which the others are lodged when the proboscis is not in use. Dr. D. stated that he had not been able to find any appearance of teeth, except on the two longest pieces; in these he had found them near the tip. The two longest pieces, also, are marked by transverse lines, extending from one edge to the other, throughout their whole length.

Cuvier and others state that the male mosquito does not suck blood. From repeated examinations, Dr. D. has satisfied himself that the male has no sting, and consequently can not draw blood. The female alone is endowed with this organ. The male lives upon the juices of flowers and plants.

Mosquitoes are propagated only where there is water. The eggs, deposited in water, go through the larva and pupa state, small collections of shallow water being most favorable for their development. Most of them die in the fall of the year, but some hybernate in cellars and other warm retreats, supported by the oil which they have accumulated during the summer, and with which they are distended in the fall of the year.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

THE STRENGTH OF BEAMS.

When the ordinary mechanic looks into those books which are professedly written for his own especial benefit, and sees there the armies of Algebra and the Calculus drawn up in battle array, presenting at him their bristling weapons of squares, and abscissas, and integrals, he starts back dismayed. There, he knows, is hidden the treasure which he seeks; but his heart sinks within him as he thinks of the tremendous and to him almost hopeless effort required to break down the guard that surrounds it. It is a mistake to suppose that such treatises are immediately useful to the mechanic. They are suitable only for those who, in early life, have enjoyed better advantages than he; who have had more time and opportunities for study than he can generally command. He is a plain hard-working man, with brain quick enough to comprehend and at once realize any thing that is practical and ordinary, but who turns hopelessly from a complicated series of misty mathematical reasonings. The results of these reasonings must be popularized for him. The technicalities of the mathematicians must be removed, and their formulæ translated into his own tongue. It is in the hope of so doing, to a certain

extent, that this is written, and if any one herefrom gets a clearer idea of the very important subject discussed, the writer will feel abundantly repaid.

THE ELEMENTARY PRINCIPLES OF THE CALCULATION OF THE STRENGTH OF BEAMS.

To simplify the reasoning, we will suppose for the present that the beam itself weighs nothing, and consider only the effect upon it of the imposed load.

There are three strains to which a beam may be exposed. 1st. Of extension, as when a weight is suspended from the end of a perpendicular beam. The ties of a bridge-truss suffer a strain of extension. 2d. Of compression, as when a weight rests upon the top of a beam. The braces of a bridge-truss, or ordinary columns are instances of this strain; and 3d, a transverse strain —that sustained for instance by the chords of a bridge-truss. The first two act in the direction of the fibres of the wood, and the third at right angles to them. It is evident that the first depends directly upon the number of fibres composing the beam, without regard to its length, and therefore the tensile strength of beams are as the areas of their cross-sections; that is, if one beam of a certain area will sustain 100 lbs., another beam of twice that area will sustain 200 lbs. The second also depends directly upon the number of fibres; but here enters another element. It is evident that if the beam can be prevented from flexure, and retained in such a position that the weight shall always act in the direction of the fibres, the length is immaterial. But after the beam is elongated beyond a certain point, (which practically is about seven times the diameter of its base,) it is found difficult to retain it in such a position, and this difficulty increases with its length; therefore the strength of beams, to resist a compressive force, varies directly as the areas of their cross-sections and inversely as their length. Resistance to a legitimate crushing force depends upon the lateral adhesion of the fibres, which may be resembled to a bundle of rods, which would not fail if bound firmly together. Thus, for a brace or post, straight-grained is better than cross-grained timber. A fir post will carry three times as much as one of oak; although to resist a strain by extension, oak is much the stronger.

The third, or transverse strain, is in a measure a combination of the first two.

It is easy to find by experiment the strength of a single beam, but in the experiment, the beam is generally destroyed, and besides, a series of experiments can not be entered upon to ascertain the strength of every portion of each one of the myriad structures which the ever-increasing wants of a restless industrial progress demand. A way must be devised by which, from an experiment on one beam, we can determine at all times and readily the value of any similar beam. And this is the province of the mathematician. Into his formulæ enter always and chief the results of the practical experiment, and the *constant* must be known thoroughly and truly, or the formula is useless. Let us endeavor to see how the two are connected.

If a beam is supported at each end and loaded in the middle, the consequence is a deflection more or less from the horizontal. In this deflection different parts of the beam sustain different strains. Of a vertical section taken transversely through the middle, those fibres at the top of the beam will suffer a strain of compression, while those at the bottom will suffer a strain of extension. It is similar to the case of a bended bow, the string of which is stretched taut while the fibres of the bow itself are crushed into each other longitudinally. If we examine the section of fracture of a beam broken across, we shall find the fibres at the bottom literally torn asunder, while

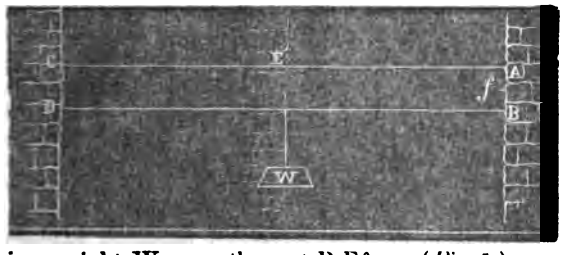
those at the top are forced into each other. It is evident that as these diverse strains approach, they gradually neutralize each other, until finally meeting they harmonize in a line within the beam, in which there is neither compression nor extension. This is called the Neutral Axis, and in regularly shaped beams is generally at or near the centre. It is important in estimating the power of a beam, to ascertain as nearly as may be its exact position; for the strength of the beam is limited to that of its weakest part. For instance: if the resistance to compression is represented by 100, while that to extension is but 50, then the strength of the beam is but 50. Thus, the ultimate tensile strength, that is, the power of the cohesive attraction of the particles, which must be overcome in tearing them asunder, of cast-iron is about 6.5 tons per square inch, while its compressive strength is about 48 tons per square inch. To construct, therefore, a cast-iron bar in the strongest possible form, the quantity of material in the bottom must exceed that in the top, in the ratio of 48 to 6.5; that is, the neutral axis must be located nearly eight times as far from the bottom as from the top.

This, however, for the most part depends upon the material composing the beam, and as such, does not properly come within the limits of this paper.

We will take the case of a beam, the neutral axis of which is in the middle, and the resistance of which to compression is equal to its resistance to extension. This is a perfectly balanced beam, and in the strongest possible form.

A beam may be varied in either or all of its three dimensions, length, breadth, and thickness.

It is evident that the longer a beam is, the other dimensions remaining constant, the weaker it is, and this in direct proportion to its length; that is, if the length be doubled, the strength is halved. Therefore the strength is said to be inversely as the length. Suppose a beam, fastened at each end in a wall, and loaded in the middle. The pressure from the weight is communicated by the particles composing the beam to each other, and so is transmitted to the abutments, or end-supports. It is manifest that the pressure and the resistance to it are equal on each side of the weight and at each end of the beam. Therefore if we calculate the effect of half the weight on half the beam, it will be as though we had calculated the effect of the whole weight on the whole beam, and will be much more simple and comprehensible.



Suppose then the beam A D, loaded at the centre E with the weight 2 W, be divided through the point E, and the part E D with half the weight be removed. What will be the effect of the remaining weight W upon the part B E? (*Fig.* 1.)

B E may be considered as a lever, of which W is the power, and A B the fulcrum. And, therefore, the strain at A B is equal to the product of the length of the lever into the power $= W\,l$ in which $l = B\,E$. But W is constant, therefore the strain varies with the length, and hence, as above, the strength is inversely as the length.

Now, to resist this strain we have the inherent strength of the section at A B. At A, as we have seen above, is the greatest strain of extension, and at B the greatest of compression, while at *f* the neutral axis is no strain

whatever. Suppose the beam to be cut by a number of parallel horizontal planes through the points *a b c f d e g*, and that each of these planes represents a layer of the fibres of the beam. Then the strain sustained by the extreme outside fibres at F G, will continually diminish until it becomes nothing at the neutral axis *f*, and the strain upon any intermediate layer of fibres depends upon its distance from *f*. Therefore, if the strain upon the outside be represented by the line F G, the strain upon the whole section of extension will be equal to the triangle F *f* G; and correspondingly that upon the section of compression by the triangle H *f* I. Now, the entire sum of the forces of these triangles may be considered as accumulated at their respective centres of gravity *x* and y.

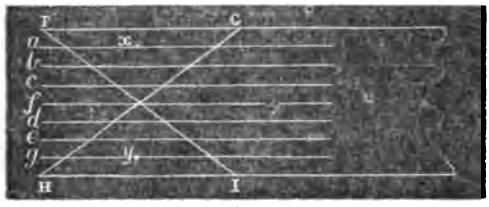


Fig. 2.

Let us at present consider that part of the beam affected by extension alone: *f* is the point at which there is no strain; E the end of the beam to which is attached the weight W, and *x* is the focus of the triangle of extension: *x f* E may then be considered as a bent lever, of which *f* is the fulcrum. The effect of the weight W is to turn the point *x* around the point *f*. This is counteracted by the power P, representing the resistance to extension of the beam. Suppose that the arm *f* E of the lever is four times as long as that of *f x*, then P=E W; for by the principles of the lever the products of the arms into their respective weights must equal each other—that is, *f* E *x* W=*x f x* P, which is the equation of equilibrium. If *x f* be doubled, P must be halved, in order to maintain the integrity of equation. The same is true of the triangle of compression. Where *f* E and W remain constant, the P varies as *f x*; or the power of resistance is as the line *f x*, or the distance of the neutral axis from the centre of gravity of the resisting triangle. This distance, which is the leverage with which the resistance acts, depends, of course, upon the depth of the beam. If the depth is doubled this leverage is doubled, and thus the resistance doubled. But by doubling the depth of the beam, the entire number of fibres is doubled, and this also doubles the resistance. Hence, by doubling the depth of the beam the strength is quadrupled—that is, the strength of beams varies directly as the squares of their depths.

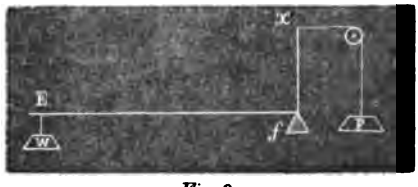


Fig. 3.

If the breadth of the beam be doubled, the leverage of resistance, as above explained, will not, as is readily perceived, be effected. But the number of fibres will be doubled, and with them the strength, which, therefore, will vary directly as the breadth.

We have seen the results of changes and modifications in all the dimensions of a beam—its length, depth, and breadth. Combining them all, and representing the length by *l*, the depth by *d*, and the breadth by *b*, we see that the strength of beams varies as $\frac{b\,d^2}{l}$; which may be taken for the expression of the strength. Now, let us find the weight that will break this beam.

Suppose that we have made experiments on a beam of certain dimensions —for instance, one each side of which is a square inch—and have found that a certain weight C will just break it. This is its ultimate strength. From the result of this experiment, we wish to estimate the strength of other beams, of various dimensions and of similar material. By using the breaking-weight C of this beam, as a unit of comparison with any other whose breaking-weight W we wish to find, we see that the strength of the beam experimented upon is to the strength of the given beam as the breaking-weight known is to the breaking weight sought; or,

$$1 \; : \; \frac{b\,d^2}{l} \; :: \; C \; : \; W\text{—whence}$$

$$W = \frac{b\,d^2}{l}\,C.$$

Rule.—That is, to ascertain the breaking weight of any rectangular piece of timber, fastened at one end and loaded at the other, multiply the product of the breadth and the square of the depth in inches, by the weight necessary to break a piece of similar timber, whose length, breadth, and depth are each one inch, and divide this by the length in inches.

In cylindrical beams the strength is as the cube of the diameter, and in square beams, as the cube of the depth or breath—for it is evident that in both these cases $b=d$.

From a great variety of experiments the value of C has been deduced, and tables are given by authors showing the experimental strength of different timbers when exposed to a transverse strain. The following is compiled from Cresy's Encyclopedia of Engineering. The numbers set opposite each kind of material is the breaking weight of a stick one inch in each of its dimensions, or the value of C as above explained:

Alder,	1590 lbs.	Oak,	1672 lbs.
Ash,	2355 "	" (Canadian,)	1766 "
Beach,	1556 "	Pine, (pitch,)	1632 "
Elm,	1620 "	" (red,)	1341 "
Fir, (Norway,)	2576 "	Poplar,	981 "
" (N. England,)	1102 "	Sycamore,	1608 "
" (Spruce,)	1395 "		

By this table, what is the breaking-weight of a beam of oak, the breadth of which is 10 inches, the depth 12 inches, and the length 14 feet?

$$W = \frac{10 \times 12^2}{168} \times 1672 = 14{,}331 \text{ lbs.}$$

This is its ultimate strength. In practice it should never be subjected to more than one fourth of its breaking weight.

The above formula is applicable to a beam subjected to the aforesaid conditions alone—that is, to a beam fastened at one end and loaded at the other; or what is the same thing, to a beam fastened at each end and loaded in the middle. A departure from these limitations necessitates a change in the formula. It is true, however, that this position of the load subjects the beam to the severest strain to which it can ever be liable; and, therefore, if it be strong enough to resist this, it may be safely trusted to bear the same load in any other position in which it may be placed.

By a reference to fig. 1, it will be seen that the principal transverse strain sustained by the beam A D, loaded by the weight 2 W, is in the middle E, because there the leverage is the greatest. From here it continu-

ally diminishes toward the abutments. The philosophy and extent of this diminution, the effects of a change in the position of the load—of a uniformly distributed load—of a movable or variable load, and other such important matters, will be considered hereafter. C. E.

PLOUGHS: THEIR CONSTRUCTION, ETC.

We have taken up our pen, with the purpose of preparing an article that shall be of practical value, in respect to this important implement. But it is exceedingly difficult to do justice to our own ideas upon this subject, for the want of means, geometrical diagrams but imperfectly representing some of the principles involved. The most that we shall assume to undertake, just now, is to open the subject for future elucidation, and we shall be "right glad" if our readers will give us the benefit of their thoughts in relation to it. Ploughmakers have a direct interest in the subject.

At almost every annual fair, we used to find that premiums were given for the "best plough." Now, all are fully persuaded that no one plough is "the best," for *all* uses, in the same soil, nor for the same service in different soils. It is equally obvious that different services are required of the plough in the same field, at different states of the seasons and of the crop.

What are these services?

1. The *sward*, or matter consisting of matted roots and soil, variously mingled, are to be turned up. The roots are not to be torn asunder, nor the soil pulverized, but the whole object of the farmer is gained simply by turning a few inches of the soil bottom upwards. If old grass lands are ploughed in the fall and are to remain untouched till spring, the farmer's desire is fully realized by this one process, and all power applied beyond this is labor lost.

2. It may be that the same kind of surface is to be prepared by a single ploughing, in spring, for the reception of the seed. Then a certain degree of pulverization is desired. But how much?

If the soil is sandy and dry, too much pulverization will prove fatal to the germination of the seed. All the moisture is evaporated. In such cases, a plough is wanted that will turn the furrow without entirely destroying the slight adhesion that exists among the sandy particles.

But other soils are more adhesive, and more moist. In such, the plough should be so constructed as more completely to separate the particles of soil; or in other words, to pulverize the soil more effectually.

A difference of great importance also regards the depth of furrow. One shape is best for a shallow furrow, and another for a deeper; or rather a plough that operates well in a shallow furrow, does not of necessity work as well when it turns a deeper furrow. A plough *may* be built to turn equally well a furrow of any desired depth.

Then, there is the cutting of the soil, preparatory to turning it, and the direction of the draught.

All these points are of practical importance. Not one can be overlooked without loss. And we might, perhaps, add one more at least, for extra deep ploughing, to wit, the pulverization of the soil without regard to any change in its position. The object then is merely to stir up, to loosen, without bringing lower strata to the surface, or burying the surface soil beneath the lower

strata. After all these, must be considered the best mode of adapting the handles of the plough, to secure the most perfect control of it.

The mere act of cutting calls for the exercise of science. Go into a book-binder's shop and see the hands at work rapidly cutting up the sheets, perhaps with a piece of bone or horn that is so far from having a sharp "edge," that an insect might crawl on any part of it, and yet the sheets are not torn. *If* you attempt to use the same tool, you spoil half the paper. Many of our readers have had experience of this sort, in attempts to cut the leaves of books and pamphlets. Some of our readers complain of us that we do not "cut open the leaves." It would be convenient for them, perhaps, but if they will apply a little science, as we intend by and by to explain it, they will not find it a very severe nor hazardous task.

After the soil is properly cut, in two directions, then the process of turning the furrow commences. The wedge is to be driven, the furrow is to be lifted, simultaneously or successively. Shall these two processes be carried on at the same instant, or one at a time? The latter, of course, requires less power at any one moment, than if the double service were required. Propelling the plough forward one foot involves several distinct actions—that of a wedge in a horizontal direction, lifting it perpendicularly, and also a proper amount of pulverization. The inventor of a plough has regard for each of these results, and must adapt his tool to all the different kinds of soil. For what will thoroughly pulverize sand, will scarcely break a clod of other soil.

To accomplish these various results in different soils, and to any given extent, different mechanical contrivances are requisite. For turning furrow-slices unbroken, in loose soils, certain gentle curves are requisite. For a thorough breaking up and separation of the masses of earth, bolder curves and shorter mould-boards are required.

So far as the resistances to be overcome are concerned, all may be resolved into two terms, adhesion and friction, while on most soils the latter consumes a large portion of the power demanded in this work. Hence, other things being equal, that plough which accomplishes the service required with the least friction, is the best plough; and this friction is determined by mathematical calculation. Here is one of the most important questions for the investigations of the man of science. Experiment must test his correctness, for perhaps in his calculations, which are right as far as they go, he has overlooked some one *factor* or requisite, which will render all his calculations worthless.

First, the requisites of a good cutter. A thin cutting edge, of course, can be driven through soil with less force than would be required to tear it open. But, besides this, the position of the blade is also important. Apply a thin ivory blade, or a table-knife, to the fold of a newspaper, *at right angles to it*, and exert a little force, and you tear the paper anywhere else rather than at the point to which it is applied, and if the paper should be separated in the right place, it will present very rough torn edges. Hold the blade obliquely and apply force, and the roughness of the edges will be sensibly diminished. If the handle is further from you than the point of the blade, and the motion is longitudinal, so that the cutting point constantly moves from the handle to the other end of the blade, while you push from you, there is still improvement in the condition of the cut edge. But if the handle is much nearer to you than the blade, say at 45° with the fold of the paper which is to be cut, and the knife is drawn towards you, while it is also forced against the paper, you will make a smooth edge when you cut. One who shaves himself

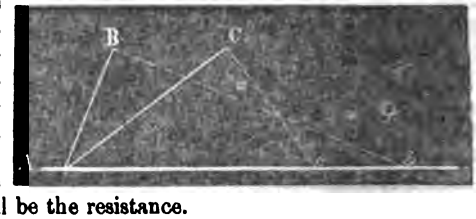
may experiment upon these modes of operation, and will scarcely doubt their importance.

In a plough, there is no opportunity for the sliding motion—that is, none has ever been devised. But regard is had to the position of the knife. It should not be perpendicular to the surface, but cut obliquely. It should also cut to the bottom of the furrow. The horizontal blade, or that which severs the bottom of the furrow-slice from the stratum below it, is governed, of course, by the same rules. There is, however, one point of difference. If the furrow-slice is to be turned unbroken and retain its place on the field, without lapping over the next furrow-slice in one place, and leaving a gap in another, it is desirable to leave a short space uncut, that it may act as a hinge on which the furrow-slice may turn with due regularity. This is not obviously to gain power, but rather at a slight loss of it, for the sake of another good.

The turning of the furrow-slice. If the width of the plough is too great in proportion to its length, making the wedge too blunt, the furrow will be broken into pieces and be laid irregularly. If the wedge is too long, the plough will not be so easily managed, and the furrow-slice will not probably be well laid. The furrow-slice should not leave the mould-board till it has been carefully turned considerably beyond a perpendicular, so that it may drop regularly into its place. If the plough is too short, the extreme pressure of the soil against the mould-board will drive the plough to the land-slide, and produce irregularities in the line of its direction and in the position of the slice.

The great question then comes up, What should be the shape of a plough-share in order to secure all these points? Some are concave through nearly their whole extent, thereby increasing friction unnecessarily; some are decidedly convex, breaking the furrow by lifting it too suddenly; some others are concave in one direction, and straight in another.

This seems to us the best form for general work, while each of the others may have their merits for some special service. The boldly convex will pulverize the soil most effectually, while it requires most strength of team. But as suggested in the beginning, no two states of the same soil are best suited by the same plough. General principles only can be inculcated.



If A B and A C are the mould-boards of two ploughs of the same width, the resistance which each encounters is in proportion to the perpendiculars B *b* and C *c*. Hence, the smaller the angle formed by the mould-board with the line of the furrow, the less will be the resistance.

But this is only one view of the subject. We regard the mould-board as a flat surface, in the above proportion, while in all ploughs, we have more or less of curved lines in this part of the implement. The amount of curve, its direction, and the shape of the board, are all questions of great practical importance. The effects of these different shapes, we propose to consider hereafter.

So also the form and length of the beam, or, in other words, the connection of the plough with the driving power, and the length, connection, and adaptation of the handles, are essential items in considering this question.

What ploughs, in fact, possess the requisite proportions in the greatest

degree, with the best line of draught, etc., is a separate branch of inquiry, which we have not the means to pursue. If any of the different manufacturers, or their friends, will furnish statements or descriptions illustrating this subject, we will cheerfully give them place.

A NEW AND GOOD MODE OF WIRE-FENCE.

THE agriculturists of the United States have been looking long and anxiously for some better mode of fence than any now in vogue. Our forests are steadily retiring before the advancing wave of civilization; and *wood*, the most common material for fencing, is daily becoming more scarce and expensive. Many of our States have no *stone*, so that we can find little relief from the growing scarcity of wood in *wall-fences*. Nor can *hedges* or *live-fences* avail us; our soil, climate, and physical geography being inimical to them. One of the most eminent agricultural writers in the country recently stated, that in all his travels east, west, north, and south, he had found *but one good live farm fence;* "and that," said he, "was supported on one side by a board-fence, and on the other by a rail-fence."

So expensive, indeed, have all our present modes of fencing been found, that Burnap, a well-known agricultural writer, has demonstrated that "the fences of this country cost *more than twenty times* the amount of *all the specie* that is in it. In some States—for instance, Texas, where rough cypress boards are sold for seventy dollars per thousand feet—the expense of fencing a farm is two or three times greater than the first cost of the farm itself.

These long-established facts long since led many of our leading agricultural and mechanical journals, lecturers, writers, and associations, and especially the New-York Society of Agricultural Debates, to the conclusion that *iron* or *wire* would eventually be adopted as the staple material for fences. But the difficulty heretofore has been found in the want of a *machine* for the manufacture of wire or other iron into fencing. *That machine has now been invented*, patented, started, and the *netting* made by it successfully and extensively tried for fencing. The inventor was John Nesmith, Esq., of Lowell, Mass.; and the Lowell Wire-Fence Company are the manufacturers of this fencing, which they claim to be, and perhaps correctly, the cheapest, considering its strength, closeness, durability, and beauty, in the world. Thus has the great necessity of American agriculture been supplied, by an invention which will, without doubt, produce, at least in some sections of country, a considerable revolution in our system of fencing.

By different machines, constructed, however, on the same general principles, all kinds of this netting have been produced, adapted equally as a fence for cattle, sheep, pigs, fowls, roads, lawns, gardens, ornamental fences, vine-trelisses, *netting in lieu of bed-cords in bedsteads*, window-netting, bird-cages, hen-coops, etc. The netting is furnished in neat and portable rolls, at from seventy-five cents to two dollars per rod; some being varnished black with asphaltum varnish, some painted of whatever color, and some galvanized, in order to beautify and preserve it from rust; the width or height of this netting, the size of the wire of which it is composed, and the meshes or spaces between the wires, all vary to suit the tastes of purchasers. Some of the netting is two feet, some three feet, and some four feet in height.

The sizes of the wire are from No. 20 to No. 10; and the meshes are from one to six inches. Any farmer has skill enough to apply it to his own uses.

The fencing is fastened to posts, set from ten to fifteen feet apart, by nails, brads, or iron or wire-staples; the upper edge of the netting being kept on a level from one terminus to another; and no rails are necessary, though some farmers use a *top*-rail occasionally.

This fence is particularly adapted to those districts which are periodically subjected to *hurricanes* and *floods*, offering no resistance to wind or water. While other fences cover from one to four feet of the soil throughout their length, this occupies no space at all, and shuts out none of the genial rays of the sun. While other iron-fences are seriously injured by the alternate expansion and contraction, occasioned by the changes incident to the temperature of the atmosphere, this, by the novel and ingenious manner in which its wires are knit or woven together, is enabled to undergo these changes of temperature, and the expansion and contraction occasioned thereby, without the slightest deterioration or injury. It requires little and unfrequent repair, and is calculated to last a century or more. The farmer who has not a surplus of wood or stone on his farm, can find no fence so admirably adapted to his wants, by cheapness, strength, portability, durableness, beauty, and economy, as this. By an outlay of less than a dollar and a half per rod, with a little personal labor, and a few posts, he can erect a substantial farm-fence, impassable to cattle, sheep, or pigs, which will survive when he is no more, to his children and his children's children.

We propose, in a future article, to present suitable drawings of this remarkable mode of fence, with additional descriptions of the same. Meanwhile, we will be happy to answer inquiries, and can send printed specimens of the different patterns or styles, if so requested.

STRODE'S HYDRAULIC RAM.

Mr. Strode, of Philadelphia, has been engaged several years in the manufacture and erection of water-rams, in which he has made several valuable improvements, secured by various patents. He has received premiums at the Pennsylvania State Fair, 1854, and at the Franklin Institute, 1854.

His first improvement consists in laying the driving-pipe, which conveys the water from the head to the ram, in the brachysto-chrone curve, which is the curve in which a body will descend from one point to another point in the shortest time, and therefore with the greatest mean velocity. By this property of the above curve, a greater quantity of water can be raised by a machine of a given size, than can be raised with the driving-pipe laid in any other direction; and in consequence of the increased reäction of the water thus produced, the discharge-valve is opened with more rapidity and certainty. A second improvement consists in the carrying of a pipe from the upper valve-seat of the puppet-valve to the bottom of the air-chamber, for the purpose of transferring the shock produced by the rising of the puppet-valve to the air-chamber; and also in placing a series of short vertical tubes, extending from the upper valve-seat of the puppet-valve to the external air. By these improvements, the puppet-valves of hydraulic rams can be made

to slide in perfect contact with the top of the chamber, without producing a destructive shock on the metallic parts of the chamber, and without the puppet-valves sticking to the upper seat, by reason of a partial vacuum there. He has also made a further improvement in the arrangement of these valves, whereby as the puppet-valve rises, the water inclosed between the top of the puppet-valve and the valve-seat, is made to escape at the side of the puppet-valve down into the valve-chamber, by which arrangement the shock of the valve and its sticking are entirely obviated, without any additional tubes or complication of apparatus. By means of these improvements, he can construct rams which will be free from lability to derangement; and rams of the largest size can be constructed, which shall be equally durable, efficient, and simple in construction, as rams of the smallest size.

THE MUSQUIT TREE.

A TEXAS paper contains the following interesting account of the tree concerning which so much has been said as affording a gum which it is thought will prove an excellent substitute for gum arabic, and the getting of which it believed, will, ere long, prove a profitable employment for the Indians of the West:

"This is a very abundant timber in many portions of Western Texas, possessing some remarkable and valuable properties. It deserves attention. Although a very compact and heavy wood, and generally free from rot, yet the centre portion is generally shivered in circles often as near as two or three inches to the surface. It splits with remarkable accuracy through the centre, and, although a scrubby low growth, its great durability renders it valuable for posts and fencing material. A considerable amount of timber may be procured from it, and for furniture there is scarcely any wood superior to it. It takes a beautiful smooth polish, never shrinks, although put together green. The color is at first a bright brown, and with age assumes a deeper bright brown. Perhaps no wood yields greater heat than this when seasoned. The sap portion is very thin, often not more than one fourth of an inch thick. If the tree is hacked in the months of June or July, a gum issues in considerable quantities, and hardens from the action of the sun, having all the properties of gum arabic. The decayed wood by being burnt under cover yields a large amount of benzoic acid. The burning of this wood in stoves is very destructive to them; the grating and sides are rapidly corroded both by the heat of the grate and acid vapor of the burning fuel. To the soap-maker it furnishes a material of importance. The ashes, instead of containing potash, as most hard woods do, are carbonic acid and soda combined; and by putting say a peck—and half a bushel would do no damage—of fresh-burnt quick lime to the barrel of ashes, it will yield caustic soda-lye that will make the very best soap. Cattle are very fond of the ashes, as they lick them up whenever a tree is burnt upon the prairies. Another use, it is probable, could be made of the ashes; which is to scatter say half a bushel through each load of corn as it is housed, to destroy the weavil. It would certainly do no mischief, and would improve the shucks. As a fertilizer there is no doubt it would give valuable results upon worn-out soils; but it is not probable that the application will be made for many years, for the soil upon which the musquit grows is invariably fertile and of great depth. This tree belongs to the family of acacias."

INFLUENCE AND IMPROVEMENT OF THE SUB-SOIL.

The influence of the sub-soil is of great importance. It may entirely control the fertility or barrenness of a given tract. Hence its actual and relative conditions should be carefully studied, For example: Let us first suppose a sandy surface with a clay sub-soil. The hard clay is impervious to the rains, and the sand above it has but little power to retain them. Hence, if the surface-soil is shallow, and if the waters falling upon it are not retained by the natural formation of the surface around, in a dry season it must be dry and comparatively unproductive. But let this sub-soil be thoroughly broken up, and rendered so porous as to absorb the rains which fall upon it. Clay having the power to retain moisture in an eminent degree a reservoir is here provided for a season of drought, which may secure good crops, which would otherwise be a comparative failure. For this clay, being well furnished with moisture, as the surface becomes dry and hot, will gradually yield up this valuable deposit, in the form of water or of vapor, according to circumstances. If the season is wet, large quantities of rain falling upon it, which are not absorbed, will themselves dissolve the more soluble parts, and running off to waste, greatly impoverish the land. If the season is wet, a part at least of the excess of moisture is absorbed by the prepared sub-soil, and the surface is proportionally benefited.

If the land in question is inclosed on all sides by higher surfaces, so as to prevent the escape of the rains descending upon it, of course it will be cold and wet, and comparatively worthless. Under such circumstances, a thorough breaking up of the clay beneath would open a way of escape for the excess of water, the clay retaining a considerable portion of it, which would, as before, become available in time of need.

If both soil and sub-soil are porous, the tendency will be to render the whole too dry in ordinary seasons. Under such circumstances, deep ploughing is not desirable.

If the soil is clay for a considerable depth, including what is usually termed soil and sub-soil, shallow ploughing will only produce a cold and wet surface, unless there are ample facilities for draining. And if these latter conditions exist, then the soil may be well moistened by the rains, but it speedily becomes hard and dry, the roots can not penetrate into it, and the plant dwindles and is comparatively worthless. If this clay were thoroughly pulverized to a great depth, the excess of water would speedily disappear, and the soil might still remain in a favorable condition for the growth of plants.

A gravelly sub-soil exerts a similar and favorable effect on a clay soil. If the latter is well cultivated, the sub-soil, retaining a bountiful supply of water, though less than if it were clay, yields it up as it is required, and tends to secure a good growth on the surface.

A sandy sub-soil, being incapable of retaining any thing, acts as a leach in depriving the soil, not only of its moisture, but of every thing that may be held in solution, which as readily escapes to still lower depths, or is otherwise effectually cut off from contact with the roots of the crop. Hence, to benefit such soils, the first step must be to render not only the soil but the sub-soil retentive of moisture. To this end, lime, gypsum, charcoal, and other substances of the same character should be freely used, and thoroughly mixed with the soil to as great a depth as is practicable.

While this process is going on, it should also, as indeed in all cases, be remembered that one great point in all cultivation is to produce a soil of fine minute grains or particles. The particles of soils differ in this respect as essentially as do the fibres of wool in fineness, or of hair. As a frequent and continued application of the comb and brush will make the most stubborn head of hair to become soft and pliable, so will proper cultivation improve, in these respects, the character of our soils.

The ploughing in of green crops, or of vegetable matter but partially decomposed, tends very strongly to recover a soil that is too hard and dry. For a clay soil, compost, well mixed, in which sand is a predominant element, will also be found very useful. So horse-dung is an efficient application for such lands, not acting as a proper manure, so much as an *amendment*, its effect being physical rather than chemical.

THE "NE PLUS ULTRA" WHEAT.

For several seasons past, much interest has been excited in this neighborhood, in the result of experiments made by Mr. Harradine, of Needingworth, near St. Ives, Huntingdonshire, in the growth of a new description of wheat, and which, if "it giveth forth its increase" at the rate of multiplication that has attended it hitherto, bids fair to create a revolution in the agricultural world. One ear of it was sown in 1849, on the land of Mr. Harradine, and the produce of this again in 1850 and 1851, when it yielded at the extraordinary rate (especially for those years) of 19 combs, 1 bushel, and 1 peck per acre, (77¼ bushels.) It has been sown on almost every available description of soil, and introduced in every imaginable change of crops. It was sown after Tartarian oats, clover, seeds, peas, and tares, on soil of various compositions, fen and highland; in all cases the quantity of seed was restricted to four pecks per acre; but the result was the same, the yield reaching that previously realized by Mr. Harradine. It has been sown after wheat, clover, barley, beans, oats, and fallow, and sustained its reputation through these trials: it has been sown in winter and in spring, drill, broadcast, and dibbled, with the same results, some put in in February showing no diminution in the yield. The preparation of the land may be the same as for ordinary wheat, and the same rate of increase in the yield over ordinary sorts may be expected.

[The above is from the *Cambridge* (Eng.) *Chronicle*, and if reliable, is certainly worth the attention of agriculturists.

METROPOLITAN MECHANICS' INSTITUTE.

The Second Exhibition of the Metropolitan Mechanics' Institute, for the promotion of Manufactures, Commerce, and the Mechanic and Useful Arts, will be opened in the city of Washington, on Thursday, February 8, 1855, in the new and splendid hall of the Smithsonian Institute. The rules adopted by the Committee are as follows:

RULES.

1st. The hall will be opened for the reception of goods on Monday, the 29th day of January; and on the evening of Thursday, the 8th of February,

at 7 o'clock, the exhibition will be formally opened for the reception of visitors, and continue open about four weeks.

2d. No article deposited after Saturday night, 3d of February, can be entered upon the Judges' lists for competition or premium, except such as the Committee shall be satisfied were dispatched from a distance in time to have reached the hall by that day, but failed to arrive from unavoidable detention.

3d. Articles designed *for exhibition only* will be received, *free of charge*, until *Tuesday night*, 6th of February, at 10 o'clock, after which time *depositors will be subject to a charge* of from 50 cents to $1, for each article deposited.

4th. Apprentices and minors who contribute articles of their own make or invention shall specify their age, and the time they may have served at their business.

5th. All articles deposited for competition and premium must be of American manufacture, conspicuously labeled with appropriate names; the name of the maker and inventor, if known, and the name of the depositor; a copy of which label must be furnished the Clerk at the time of bringing the goods for entry on the record. Prices may be affixed, or not, at the option of the exhibitor.

6th. Depositors, at the time of entry, will receive a ticket of title to their goods, which ticket will also admit them to the Exhibition at all times, when open to the public.

7th. This ticket or check shall only be used by the depositor, and when found in the hands of another person, will be stopped at the door, and the depositor deprived of its use.

8th. No article can be removed from the Exhibition until its close, without permission of the Committee.

9th. The Machinery Department will be under the care of a special Superintendent, and the Committee offer every facility of steam-power, fixtures, labor, etc., *free of expense*, hoping that this portion of the display will be unusually varied and attractive.

10th. The time of delivery of the Opening and Annual Addresses will be announced hereafter. The Closing Address will be delivered, and the Premiums announced on the closing day, by the President of the Institute.

11th. The Judges will be appointed about the time of the opening of the Exhibition, and the hours before 10 o'clock, each morning, *will be appropriated exclusively to them to examine the articles.* Before 10 o'clock, therefore, no *owner, agent, depositor, or visitor will be admitted to the hall*, unless the Judges require some explanation, in which case *all the competitors in the same class shall be duly notified to attend.*

12th. Where objections are raised, proof of origin may be required by the Judges or Committee on Awards.

13th. All articles will be at the risk of the owner or depositor, who is expected to be present during the hours of exhibition. In the intervening time, and at all times, the Committee will use every effort for their preservation.

14th. Proper order will at all times be preserved by an efficient police, who will be present to prevent offenses against contributors and visitors.

15th. Season tickets to the Exhibition will admit the owner and a lady or two children at all exhibition hours. A season ticket will make its holder a member of the Institute, and will be received, at the close of the Exhibition, in payment for his initiation fee and one year's subscription.

Members or junior members who transfer the use of their tickets, shall be deprived of the privileges of the Exhibition.

N. B.—Goods should be addressed as follows: "*Exhibition of the Metropolitan Mechanics' Institute, Washington City,*" and should have the nature of the articles, and the name of the party sending them, distinctly marked on the package. They should also be accompanied by a detailed invoice.

Any further information will be given by applying, post-paid, to the Superintendent, to whom all communications on the business of the Exhibition should be addressed. THOMAS C. CONNOLLY, *Superintendent.*

The following is the list of officers:

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AMERICAN POMOLOGICAL SOCIETY.

THIRD SESSION AND FIFTH MEETING. BOSTON, SEPT. 13, 14, 15, 1854.

BY the courtesy of Hon. M. P. Wilder, the President, we have received a copy of the proceedings of this Society. It forms a pamphlet of 258 pages of 8vo size, and is executed in very handsome style, worthy of the Massachusetts Horticultural Society, by whom and at whose expense it was published. We gave in our last number a short extract from one or two of the addresses, as brought to our notice in some newspaper report, and we now give, as we purpose to do hereafter, further extracts.

Mr. Wilder, the President, in his admirable address, spoke as follows in relation to

THE PRODUCTION OF SEEDLINGS.

My next suggestion relates to *the production from seed of new varieties of fruits adapted to particular localities, or to general cultivation.*

The immense loss to American cultivators, from the importation of foreign varieties, in many instances not well adapted to the countries from which

* Those marked with an asterisk compose the Exhibition Committee.

they come, and often still less adapted to our soil and climate, suggests the importance of raising from seed, native sorts which, in most instances, possess peculiar advantages. It is now generally conceded that the trees and plants of a given country, like its aboriginal inhabitants, will flourish better at home than in most foreign localities.

We rejoice that public attention has been turned to this subject by some of our horticultural journalists, and that many cultivators and amateurs are engaged in this interesting and promising department. The success which has crowned their exertions affords great encouragement to perseverance. Witness, for instance, thirty or more varieties of the cherry, by Dr. Kirtland, of Ohio, which appear adapted to our eastern climate, and some of them of superior excellence. Witness the numerous varieties of the raspberry, by Dr. Brincklé, Ex-President of this Society, of which some have endured, without covering, the severities of the last winter in the New-England States, and which also promise to be valuable contributions to American pomology. In addition to these, how many new varieties of the apple, the pear, the plum, and the grape have recently been added to the list of American fruits! How many new and excellent varieties of the strawberry have appeared since the introduction of Mr. Hovey's Seedlings!

These are sure indications of the success which will reward future efforts to obtain valuable and native varieties of fruit; and they point to the fulfillment of the prediction of the celebrated Van Mons, "that the time will come when our best fruits will be derived from seedlings." He gives the following sage counsel to his correspondents to whom he had sent trees: "*Sow your seed and persevere without interruption, and you will obtain even better fruit than mine.*"

Among pioneers in this department I am happy to notice a gentleman (now residing among us) the pupil and friend of Van Mons, one who has adopted our country as his future home, and who has already transplanted to our soil many thousands choice seedlings of the pear, which have come into his possession from the collections of that gentleman and the celebrated Esperen.

As to the best method of producing fine varieties from seed, the opinions of distinguished pomologists are not uniform.

Duhamel, among the French, from causes which seem to us irreconcilable with nature and experience, entertained serious doubts of the practicability of any method for obtaining new and valuable varieties from seed, especially of the pear, because he had tried various experiments without success for fifty years.

Dr. Van Mons, of Belgium, instead of saving the seed of the *finest* varieties, selected those of inferior sorts, upon the principle that a kind having arrived at the highest state of perfection must deteriorate, while an inferior one would improve by successive reproductions. He also held that hybridization tended to degeneracy and imperfection. Thus he assumes the doctrine that a perfect variety necessarily deteriorates, and also overlooks the fact, observed by other distinguished men, that the improvement or deterioration of which he speaks may result from natural impregnation by the pollen of other varieties, conveyed by the air or insects, and therefore that the seed of a good variety may produce either a better or a worse, and that of a bad either a worse or a better.

Mr. Knight's system of obtaining new and improved varieties depended entirely on hybridization, or artificial impregnation, so lightly esteemed by Dr. Van Mons. This is somewhat difficult to practise, on account of natural

fertilisation by insects and the wind; but it has the merit of depending on a truly philosophical principle, and with very particular attention may yet prove as available for the improvement of our fruits as it has for the production of fine varieties in the vegetable and floral kingdom, or as the corresponding principle has in the crossing of the breeds of domestic animals.

The results of Mr. Knight's experience disprove the tendency to degeneracy, inasmuch as many of his fruits, obtained by hybridization, are among the most durable and hardy varieties, as the Eyewood and Dunmore Pears; the Black Eagle, and other Cherries.

Many cultivators, as Esperen, Bivort, Berckmans, and others, both in this and foreign countries, have sown seeds in variety, and have obtained some valuable sorts. But I am confirmed in the opinion that the best means of producing new and excellent varieties, suited either to general cultivation or to particular localities, is to *plant the most mature and perfect seed, of the most hardy, vigorous, and valuable sorts;* on the general pathological principle that like produces like, and upon the conviction that immature seed, although the embryo may be sufficiently formed to vegetate, yet, not having all its elements in perfection, it will not produce a vigorous and healthy offspring. Dr. Lindley, commenting upon this practice, justly remarks: "All experience shows that in every kind of created thing, be it man, or beast, or bird, the mysterious principle called life remains during the whole period of existence what it was at first. If vitality is feeble in the beginning, so it remains. Weak parents produce weak children, and their children's children are weaker still, as imperial dynasties have sadly shown." With him, we believe this theory as applicable to the vegetable as to the animal kingdom. May not a disregard for this doctrine account for the great number of feeble, sickly, early-defoliated trees often found in our grounds by the side of those that are vigorous, healthful, and persistent in foliage? Is not the theory we advocate as important in the production of fruit-trees as in the raising of cereal grains? The skillful agriculturist saves the best seed of his various crops, and selects the best animals from his flocks and herds for breeders. Why should not this law of reproduction regulate the practice of the pomologist as well as of the farmer? Has the All-wise and Infinite enacted several laws where one would subserve the purpose?

To the doctrine of Van Mons, and other distinguished writers, respecting deterioration by age, and after a variety has reached its perfection, there seem to be some exceptions. From the accounts of Oriental travellers, may we not believe that the grapes of Eschol are as perfect now as when the chiefs of Israel plucked their rich clusters three thousand years ago; and that the same variety of the fig, the olive, and the pomegranate are as perfect in Syria to-day as in the period of David and Solomon? It is worthy of inquiry whether the native grapes on the banks of our rivers have deteriorated since the day when the red men of the forest refreshed themselves with the fruit from those vines, and whether the orange, the lemon, the bananna, and the fruits of southern latitudes, evince any more signs of decay than they did centuries ago; in a word, whether this doctrine of deterioration is as applicable to the *native* as to the foreign fruit of a country?

Why may we not expect to obtain natural varieties of the apple and other fruit as durable and far more valuable than those which have passed their second centennial, as the Endicott and Stuyvesant Pears? From meteorological, or other causes which we do not at present understand, particular varieties may deteriorate in a given locality for a season, and afterward revive; or they may show signs of decay in one locality, and flourish well

in others not very remote, as the White Doyenne, which has been considered, for many years, by some in this vicinity on the decline, while it is perfect in several places in Maine, New-Hampshire, Vermont, and other States. Fruit-bearing may exhaust the vital energy of the tree, and hasten decay, but still the variety may remain. We have among fruit-trees no example of longevity equal to that of the new Taxodium, found in California, supposed to be three thousand years old. Our object is not to controvert the opinions of those who believe in the running-out of varieties, whether their duration be limited to one hundred or one thousand years, but to enforce the importance of raising new varieties from seed, especially adapted to our own location.

At this meeting a Report was made by Dr. Harris, the eminent entomologist of "the Diseases and Insects affecting Fruit-trees and Vines." This we intend to publish as soon as we can obtain engravings of these insects, of a reliable character. We have already taken measures to secure them.

A large portion of the pamphlet before us is taken up with the discussion on the lists of fruits worthy of general cultivation, of those that promise well, and those that are rejected from the lists.

The following is the corrected list of

FRUITS WORTHY OF GENERAL CULTIVATION.

APPLES.—American Summer Pearmain, Baldwin, Bullock's Pippin, Danver's Winter Sweet, Early Harvest, Early Strawberry, Fall Pippin, Fameuse, Gravenstein, Hubbardston Nonesuch, Lady Apple, Ladies' Sweet, Large Yellow Bough, Melon, Minister, Porter, Red Astrachan, Rhode-Island Greening, Roxbury Russet, Summer Rose, Swaar, Vandervere, White Seek-no-Further, William's Favorite, (except for light soils,) Wine Apple or Hays, Winesap.

PEARS.—Ananas d'Eté, Andrews, Belle Lucrative or Fondante d'Automne, Beurré d'Anjou, Beurré d'Aremburg, Beurré Diel, Beurré Bosc, Bloodgood, Buffum, Dearborn's Seedling, Doyenne d'Eté, Flemish Beauty, Fulton, Golden Beurré of Bilboa, Lawrence, Louise Bonne de Jersey, Madeline, Manning's Elizabeth, Paradise d'Automne, Rostiezer, Seckel, Tyson, Urbaniste, Uvedale's St. Germain, (for baking,) Vicar of Winkfield, William's Bon Chrètien or Bartlett, Winter Nelis.

FOR CULTIVATION ON QUINCE STOCKS.

PEARS.—Belle Lucrative, Beurré d'Amalis, Beurré d'Anjou, Beurré d'Aremberg, Beurré Diel, Catillac, Duchesse d'Angoulème, Easter Beurré, Figue d'Alençon, Glout Morçeau, Long Green of Cox, Louise Bonne de Jersey, Napoleon, Nouveau Poiteau, Rosticzer, Beurré Langelier, Soldat Laboreur, St. Michael Archange, Triomphe de Jododigne, Urbaniste, Uvedale's St. Germain or Belle Angevine, (for baking,) Vicar of Winkfield, White Doyenne.

PLUMS.—Bleecker's Gage, Coe's Golden Drop, Frost Gage, Green Gage, Jefferson, Lawrence's Favorite, McLaughlin, Purple Gage, Purple Favorite, Reine Claude de Bavay, Smith's Orleans, Washington.

CHERRIES.—Belle Magnifique, Black Eagle, Black Tartarian, Downer's Late, Downton, Elton, Early Richmond, (for cooking,) Graffion or Bigarreau, Knight's Early Black, May Duke.

APRICOTS.—Breda, Large Early, Moorpark.

NECTARINES.—Downton, Early Violet, Elruge.

PEACHES.—Bergen's Yellow, Cooledge's Favorite, Crawford's Late, Early York, (*serrated*,) Early York, (large,) George IV., Grosse Mignonne, Morris White, Old Mixon Free.

GRAPES, (*under glass.*)—Black Hamburg, Black Frontignan, Black Prince, Chasselas de Fontainebleau, Grizzly Frontignan, White Frontignan, White Muscat of Alexandria. (*Open culture.*)—Catawba, Diana, Isabella.

RASPBERRIES.—Fastolf, Franconia, Knevet's Giant, Red Antwerp, Yellow Antwerp.

STRAWBERRIES.—Boston Pine, Hovey's Seedling, Large Early Scarlet.

CURRANTS.—Black Naples, May's Victoria, Red Dutch, White Dutch, White Grape.

GOOSEBERRIES.—Crown Bob, Early Sulphur, Green Gage, Green Walnut, Houghton's Seedling, Iron-Monger, Laurel, Red Champagne, Warrington, Woodward's White Smith.

BLACKBERRIES.—Lawson's New-Rochelle.

"THE LARGEST MILL IN THE WORLD."

PERHAPS we ought to have been more careful than to have extended the circulation of a mistake of the nature of that referred to below. Had we gone into any "calculation," we should have discovered the error. But finding it with a responsible indorser, and that it was an item of general interest, we used the scissors at once, scarcely reading it through, and thought no more about it. We thank our correspondent for his favor, which we insert below, and should like to receive statistical or other information from him at all seasons. Though it comes anonymously—so that we owe no body for it—the handwriting is quite familiar to us.—EDS. P., L., & A.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

MESSRS. EDITORS: On page 369, No. 6, of your useful periodical, you have copied from the *Lowell Courier*, and as your journal goes broadcast over the land, you have given extensive publicity to a very considerable blunder. You say that at the "Pacific Mills," in Lawrence, *the largest in the world*, (not yet, they may be one of these days,) Mr. Clapp, the paymaster, pays out to the operatives, 2000 in number, $500,000 for wages *every month*. Now, $500,000 per month are equal to $6,000,000 per annum, and $6,000,000 per annum, divided among 2000 operatives, give $3000 per annum to each. Only think of that—each Yankee boy and girl, and each Irish boy and girl—of these "*largest mills in the world*" earning $3000 a piece per annum. Come hither, ye poor desolate men and women of all trades, and grades, and professions; come, ye pulpitless ministers, ye briefless lawyers, ye patientless doctors, ye starving needle-women, needless is it for you to go any longer without money and without price; hasten to the "largest mills in the world," and sell your services at the glorious price of "$3000 a piece per annum." And here it may be asked, if the operatives get that, what does the treasurer get, what the agent, what the book-keepers,

and paymaster? Why, they must pile it up so thick, that the stockholders will run the chance of getting precious thin pickings.

The fact is, your friend of the *Lowell Courier* put on just one cipher too much to his $500,000 per month. It should have read $50,000, and would not be right then, for their monthly pay-roll has never yet exceeded $35,000. Perhaps it will be $50,000 as soon as they get to be "the largest mill in the world." At $50,000, the average pay per annum of the operatives would drop down to $300, and out of this they must pay their board.

Again, it is stated, as something remarkable, that Mr. Clapp appropriates "to each the exact amount she has earned." Of course he does, and so does every paymaster in every mill in the whole world. He would neither pay more or less. Is there any thing wonderful in paying a person just what he or she earns? There are time-tables, and clerks, and pay-rolls in all mills, and this monthly exact payment is the commonest thing in the world.

The Pacific Mills are very fine and very large, and are spending a good deal of money. The time for the first dividend is not yet fixed by the Directors, but it may come off in due season. . . .

As to their being the largest in the world *now*, it is not true, since the Atlantic Cotton Mills are 70 feet longer in the main mill, and the Bay State Mills undoubtedly cover more space. It is expected that the Pacific Mills, *when finished*, will be the largest in the world. At present the main mill is but 500 feet long; they are intended to be, one of these fine days, 800 feet long.

Yours truly,

Lawrence, Dec. 16, 1854. OLD MILLWRIGHT.

MISCELLANEOUS.

ENLARGING VEGETABLES.—Upon an average, only one half the size is attained for all vegetables grown which might easily be had by an improved mode of culture. If every thing was doubled in size, without saying any thing about the increase otherwise in the amount of crops, what a vast gain it would be to the farmer. Every body is struck with the improved value given to grain, as well as roots and esculents, by increased size. Then why don't every body try to increase their own? Take, for example, the common garden pea, and try the following experiment:

Plant it in very rich ground; allow it to bear the first year say half-a-dozen pods only; save the largest the following year, and retain of the produce three pods only; sow the largest the following year, and retain one pod; again select the largest, and the next year the sort will have trebled its size and weight. Ever afterward sow the largest seed, and by these means you will get peas, or any thing else, of a bulk of which we at present have no conception.

Select wheat in the same way, and after three years you will be astonished at the result.

REMEDY FOR THE BLACK-KNOT.—A correspondent of the *Cultivator* says that he has never found any thing that will compare in efficacy for preventing black excrescences on the plum-tree to a strong solution of chloride of lime, applied to the wounds made by their removal. He has tried this remedy for two years, and in no instance has it failed to prevent the fungus from bursting out again from the wound. A trial was made this year on about

fifty young trees, from a portion of which the knots were cut off early in summer, and no application made to the wound; to a second portion strong lime was applied, and to a third chloride of lime. In numerous instances the excrescence burst out again in the first two cases; in the latter none. Salt has been strongly recommended, but the superiority of the chloride was very decided.

Weights of Grain, etc.—We are indebted to our friend Col. Buckner for the following weights, regulated by the laws of Kentucky, of grain, etc., per bushel: Wheat, 60 pounds; corn, shelled, 56 pounds; rye, 56 pounds; potatoes, 60 pounds; beans, 60 pounds; clover seed, 60 pounds; oats, 33⅓ pounds; corn-meal, 50 pounds; bran, 20 pounds; barley, 48 pounds; onions, 57 pounds; buckwheat, 52 pounds; salt, 50 pounds; flax seed, 56 pounds; hemp seed, 44 pounds; timothy seed, 45 pounds. The above is taken from the revised statute laws of Kentucky.

Apples for Market.—We see it stated that Mr. James Upton, of Monroe county, N.Y., has shipped twenty thousand barrels of apples to New-York, by canal, this season, and has now several boats loading with the same fruit. He purchases apples at all points accessible to the canal. The crop this year is an excellent one, better than those of several previous years, and the demand for the fruit abroad makes it a profitable one.

New-England Enterprise.—We have often alluded to the prosperity of the towns and villages of these States. We find the following statement in reference to the industry of one of these small communities. The whole township, by the last census, has a population of only 1776 inhabitants.

Warren.—Among the many towns which furnish the Boston market with the necessaries of life, Warren holds a prominent rank. The people are intelligent, enterprising, and active. The farms are well adapted to grazing, and are almost exclusively devoted to that purpose. Since the first of May last, there have been sent from Warren to Boston 218,604 pounds of cheese, and 589,994 gallons of milk; and during the month of November, the same city received 73,128 pounds of pork from Warren and vicinity. Efforts are making to secure a course of lectures during the winter, and, though late, it is hoped the endeavors will succeed. The Warren Cotton Mills Co. are completing a large brick factory over one hundred feet long, and four stories high.

Granaries for the Storing of Corn.—The Messrs. Huart, the great millers of Cambrai, have patented a peculiar kind of granary which they have in use for the storing of their corn. In this arrangement the corn fills completely the space in which it is to be preserved, and is kept in constant motion by means of a steam-engine. The grain is lifted up and stirred round by means of a helix, and from thence falls upon an apparatus where, by means of a fan, the chaff, dust, and other foreign substances are removed, and the insects and their larvæ destroyed. The corn is then carried back to the same inclosed space again, and the operation from time to time repeated. These granaries are considered to be adapted not only for the preservation of corn in good condition, but for that which is already damaged.—*Le Genie Industriel, France.*

Winter Feed of Breeding Ewes.—Until two or three weeks preceding lambing, it is only necessary that breeding ewes, like other store sheep, be kept in good plump ordinary condition. Nor are any separate arrangements necessary for them, after that period, in a climate where they obtain succu-

lent food to provide for proper secretion of milk. In backward seasons in the north, where the grass does not start prior to the lambing time, careful flock-masters feed their ewes with chopped roots, or roots mixed with oat or pea-meal. This, in my judgment, is excellent economy. For the effect of the various esculents on the quantity and quality of the milk, see Liebig's Animal Chemistry.—*Sheep Husbandry.*

Railroads in Ohio.—This enterprising State contains 2181 miles of railroad completed, and 1576 miles in progress. It is said that of these, 300 miles will be completed in 1855. There are four great trunks across the State from north to south, and four from east to west. These eight lines pass through forty county seats.

Management of Fairs.—We have on our table a communication from our old friend and contributor, Durant, whom we welcome back again to our pages, on the Management of Fairs, called forth by views which we have recently given on that subject; but it came too late for this number. We shall give it a place in our next. We mention this fact, contrary to our general usage, because we wish to keep the subject on the minds of our readers, and again to invite further discussion. We are just beginning, in our opinion, to take correct observation of our true place on this subject, and it is second in importance to very few.

Composition of Eggs.—The investigation has been made of late by several distinguished anatomists, and a part of the results is given in the present number of the *American Journal of Arts and Sciences.* From this we gather the following facts:

An examination of the eggs of numerous animals proves that these bodies are as varied as the animals which they produce. They differ in the elements present, in their organisms, and in their structure. Some of them do not harden by exposure in boiling water. In the eggs of some birds, the white is almost fluid; in others, it is gelatinous. The color of the white of a hen's egg, after boiling, is pure, opaque, white, and solid. That of the lapwing, after cooking, becomes transparent, opaline, greenish, and so hard that it may be cut into little stones, used in some parts of Germany for common jewelry. The chemical constitution of the eggs of various birds differs very materially.

Turning to the eggs of fishes, it is found that the new-laid egg of the ray is covered with a shell of a bronzed-green, whose tissue is made up of short, felty fibres; its general form is rectangular, more or less elongated and curved on both sides. The internal organism is also peculiar, and among other differences it is found that the yellow is not separated from the white by any membrane. The white also differs from the white of a bird's egg in its chemical properties.

The eggs of a bounce shark are rectangular, much longer but much narrower than those of the ray. Its shell is hard, resisting, yellowish, horny. The vitellus or yolk occupies the greater part of it, and the white is more viscous than that of the ray.

These and other differences are pointed out, somewhat extensively, in the treatise before us, but the subject is not one of sufficient general interest to warrant us in occupying much space with these details.

A New Species of Silk-Worm.—Experiments have been made in France to acclimate the *Bombyx cynthia*, a silk-worm of India, which, according to Roxburgh, furnishes a silk so firm that clothes made of it will last a lifetime. These experiments, thus far, are very favorable.

C., C. & C., AND C. & E. CAR-SHOPS, UNDER THE SUPERINTENDENCE OF N. H. MARCH.—Last Friday we visited the large car-shop under the superintendence of N. H. March, on the Lake Shore Road, and spent an hour or more in examining it.

The building is a large one. It is some two hundred and ten feet long and about sixty wide. Near by is Geo. W. Sizer's foundry. There are employed in the car-shop, or connected with it, 117 men, (a large majority of whom are married,) and 20 in the foundry.

These buildings are devoted to the construction of cars of every description, and the repairing of them.

The lower room in the "large brick" of the shop is taken up with the iron and wood work, and adjoining is a complete blacksmith's establishment. We noticed all the improved machinery for manufacturing cars. The whole was driven by an engine of sixty-horse power. The upper room is devoted to cabinet-work, finishing, upholstering, etc., etc.; and connected with the main building is a large paint-shop under the charge of Charles Reipleir, a master in ornamental painting. In this department all are Germans. Opposite is a lumber-yard, and a large building for storing lumber.

We found on the track, just turned out, six new cars and a baggage-car, by all odds the most perfect we have seen. They are ten inches wider, giving three inches more on each seat and four inches in the aisle. Their bodies are thrown on to steel and India-rubber springs, which it is believed, will make them easier every way. The trucks are far stouter than heretofore. One improvement we were glad to notice. The breaks are very much improved, both in power and in speed of application—for, as arranged in these cars, one man may break upon two sets of cars. In the baggage-car we observed also another improvement. The doors were constructed to fold round into a recess so as to prevent accident to the men inside, or to lessen the chances of injury to them in case of accident.—*Cleveland Weekly Leader.*

SHIP-BUILDING. — The *Boston Journal* published recently a detailed account of the ship-building in Boston and its vicinity during the year 1854. The *Journal of Commerce*, on Tuesday, published a similar account of ship-building in New-York and vicinity. From these statistics it appears, that for the first time, the amount of tonnage built in the District of Boston, during the year 1854, was greater than in the District of New-York. But in both districts the business is now nearly at a stand-still, though it has been unusually large. In New-York, it is said that not more than 1000 hands are now employed in the ship-yards, against 3500 or 4000 employed in prosperous seasons. And that though the year has been one of unusual activity in the ship-yards, it has yet been an unfortunate one to builders, owing to the advance in building materials and labor; and several builders of long standing and acknowledged ability have been compelled to succumb to the pressure of the times, and stop business. In New-York, there have been launched during the year 88 vessels of all descriptions, representing 80,130 tons, (of which 26 were full rigged ships, and 4 were steamships,) which have cost, at the estimate of $65 a ton, not less than $5,200,000. While the number of ships built this year exceeds the number in 1853 by eight, the number of steamships built this year is six less than it was last year. About 70 steamships in all have been built in New-York, mostly of large size, at an estimated cost of about $14,000,000.

In Boston and vicinity, during the year, there have been built 57 vessels, of which 45 were ships, 8 were barques, 3 were steamers of from 150 to 350

tons, and 1 was a schooner. The aggregate tonnage of these vessels was 68,282, and the estimated cost of the whole, at $65 a ton, was $4,483,430.

Rutland County Marble and Slate.—At the late Agricultural Meeting at Rutland, Vt., Charles Sheldon, Esq., of West-Rutland, said that in 1850, there was quarried at West-Rutland, $190,000 worth of marble; in 1853, $360,000 worth; in 1854, probably $400,000 worth. From other towns in the county, he thought that $200,000 worth of marble would be exported this year. The value of the marble sold is twice as great as the wool clip of the county in 1850. It exceeds the value of the wool and dairy products of the county. At the West-Rutland quarry, there are consumed annually 150 tons of hay, 6000 bushels of potatoes, 6 tons of butter, and 6000 bushels of corn. Of the value of the marble exported, three fourths is added to the wealth of the county.

The demand has always exceeded the supply. There is no fear of a decrease of the demand. To increase the supply, more capital should be invested in quarrying and sawing marble. Rutland can furnish, annually, marble to the amount of $1,500,000. He said that the quality of the slate in this county was equal to that of any part of the world. It was inexhaustible in quantity, and the demand for it was far greater than the supply. He thought that, this year, not less than $300,000 worth of slate would be quarried in Rutland county.

Tennessee Copper.—The *Knoxville Register* states that recent discoveries afford proof of the existence of one continuous vein of rich copper ore between the Polk-county mine in East-Tennessee, and the mine recently discovered in Carroll county, Virginia. In the Tennessee vein, the miners have reached the yellow sulphuret of copper, which is considered an infallible indication of the great extent and richness of the mines in which it abounds. The discovery of this metal has infused a new impetus into mining operations, and several weeks since there were sales of three quarter sections of mining land, at about $1,250,000. The *Register* states that some five thousand tons of rich copper ore are taken from the mines monthly, netting at least half a million of dollars. The amount will doubtless be increased when the shafts which are being sunk penetrate the rich sulphuret.

Moral of the Baby Show.—We, at our cattle shows, give prizes to the man who produces the best food for the people's eating. The Americans give prizes for the mouths best adapted to eat the food which is so bountifully prepared for them on their vast continent. The two nations typify their differences in this manner. Our great desire is to find ample food for our population. The Americans are only desirous of a large population to consume their food.—*London Times.*

Productions of Algeria.—This colony promises to take a prominent rank among countries which derive their principal wealth from the production of silk. The success of the cochineal insect at Algiers is no longer doubtful. The madder of Algiers is more highly esteemed than that of Cyprus. The cotton of that colony took eleven prizes at the London Exhibition. The olive-tree grows there to the height of our largest forest-trees. Certain countries are covered with it. Species of cork-oak constitute a large part of the forests. There are also forests of cedar, pine, juniper, arbor vitæ, black walnut, etc. These statements are contained in an official report to the French government.

THE FALL-RIVER ROUTE.—This Company still retain their unrivalled reputation. Their new boat will be ready with the return of the next seasont and will be in advance of any thing yet seen in our waters. The workmen are busily engaged in finishing the interior apartments, which will so unie, elegance and comfort as to satisfy the most extravagant demands of the traveller. We have recently been shown over every part of it, and must say that we have never seen any steamboat that was so completely furnished with every thing that comfort, luxury, or taste could conceive. The following details show not only her mammoth size but thorough provision for all supposable necessities:

Her length is 345 feet, (or more than $\frac{1}{15}$ of a mile.)
Beam, 47 feet.
Width from guard to guard, 80 feet 11 inches.
Hold, depth, 16 feet 11 inches.
Tons measurement, 2300.
Height of ceiling in cabin, 11 feet 6 inches.
Steering-wheel, 7 feet diameter, 3 rims.
Water-wheels, 43 " " 14 feet length of buckets.

She has 108 inches cylinder.

She has 95 state-rooms, of which 18 have each four berths, etc., and 18 of them have berths of extra width. There are also 400 open berths, furnishing comfortable accommodations for 750 persons.

She is also provided, on a level with the upper saloon, with an apartment for ladies, in which they may arrange their toilets, etc. Water-closets are provided on both decks. Her name is THE METROPOLIS, and she will be commanded by Captain BROWN, now of the 'Bay State.'

BUILDING STONES: BROWN OR RED SANDSTONE.—We have not forgotten our promise to give our readers some information on this subject, in continuation of what we have written of marble and granite. We shall probably do so in the next number.

ORIGIN OF NITROGEN.—M. Boussingault has published the details of other experiments upon the vegetation of several plants, confirming his views as recently presented in this journal. He also promises another memoir on the same subject.

LIGHTNING CONDUCTORS.—Mr. Nasmyth has described, before the British Association, an improved arrangement for a lightning conductor for chimneys. Instead of fixing it outside by metal hold-fasts, he would suspend it in the middle of the chimney by branching supports fixed on the top. "An experience of eighteen years has tested the superiority of the plan." In the discussion, Professor Faraday recommended that the lightning conductors should be placed inside instead of outside of all buildings. He considered the shape of the conductor, whether flat or round, as immaterial.

PRESERVATION OF MEAT.—Carbonic acid is very efficient in retarding putrefaction. Beef in contact with carbonic oxide for the space of three weeks was found perfectly fresh, and of a fine red color.

GAS COAL.—The coal near Preston, Va., is found to be of great value for the production of gas, superior to any other coal in this country. It lies adjacent to the Ohio & Baltimore Railroad. So says the *Cumberland Journal.*

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NEW ENGLISH PATENTS.

APPLICATION OF GLUTEN TO BREAD AND OTHER ARTICLES OF FOOD.

J. H. JOHNSON, 47 Lincoln's Inn Fields, and Glasgow.—This British patent has been taken out on behalf of M. Durand of Toulouse, who has occupied himself for several years back with experiments as to the best modes of treating gluten so as to obtain a palatable bread from it. Gluten is obtainable from various vegetables, being their essential nutritive component; but it is to that obtained from wheat that M. Durand's improvements more particularly refer. The invention consists, in the first place, in preparing gluten bread by baking it in moulds fitted with loose lids which rest upon the gluten, and rise with the gluten as it expands by the action of the heat. The bread formed from gluten possesses great nutritive quality, and will keep for a long period of time without injury. This substance may be employed in various proportions with farinaceous substances of all kinds, and is also found advantageous in the manufacture of chocolate and vermicelli. In making gluten-chocolate, a small quantity of muriatic acid may be added. In baking gluten-bread, the inventor employs moulds of a square section and slightly conical, that is to say, slightly contracted at the base, in order to facilitate the removal of the bread after it is baked. When the paste is introduced into the mould, it is covered with a movable lid, which rests upon it, in order that its development may be progressive. The weight of this lid should be proportioned to the degree of purity of the gluten. Two rods of iron fitted at each extremity serve to prevent the lid or cover from falling off, and to limit the rising of the paste; this being most essential, as the heat having a great influence over the gluten, the rising or development of this matter would become too great, and deteriorate the bread if not forcibly restrained. For the same reason, the baking should be accomplished in a moderately-heated oven, and for the preparation of wheat-gluten no leaven need be employed. The kneading ought to be effected by manual labor, and as actively as possible. To proceed with that operation it is necessary to choose a favorable moment, which will be known by the degree of moisture of the substance, this moisture always agreeing with the amount of flour to be mixed with the gluten. Bread thus made presents the appearance of bread well worked; it is exceedingly light, and of an agreeable flavor. It is rather elastic when it is first made, but hardens in a few hours. It may be heated after being cut into slices when required for consumption; it then becomes more brittle, and is more easily masticated. It may be also kept for a long period without any deterioration whatever. The following are the proportions which are employed in the mixture of gluten with other alimentary substances, and from which the best results have been obtained:

1. Bread composed of pure wheat-gluten, with the addition of one per cent of salt.
2. Bread composed of ninety per cent of moist gluten, ten per cent of wheat-flour, and one per cent of salt.
3. Bread composed of eighty per cent of moist gluten, twenty per cent of wheat-flour, and one per cent of salt.
4. Bread composed of seventy per cent of moist gluten, thirty per cent of corn-flour, and one per cent of salt.
5. Bread composed of sixty per cent of moist gluten, forty per cent of corn-flour, and one per cent of salt.

6. The same kinds of bread, with the addition of three per cent, five per cent, eight per cent, or ten per cent of fresh butter.

For chocolate, the following proportions are employed:

1. Gluten-chocolate made in the ordinary manner, and composed of about two parts of cocoa, and one part of gluten-bread reduced to an impalpable powder.

2. Gluten chocolate made in the same manner, and composed of two parts of cocoa, two parts of sugar, and one part of gluten-bread reduced to a fine powder.

3. Four parts of cocoa, five parts of sugar, and one part of pulverized gluten-bread.

4. Gluten-chocolate composed of two parts of cocoa, two parts of sugar, and one part of pure gluten-flour, also reduced to an impalpable powder. Each of the parts composing this chocolate should be well and carefully triturated and operated upon separately.

5. Gluten-chocolate, in which the fresh gluten is rendered less adhesive by the addition of one half of its weight in water with 0·002 of pure muriatic acid, and dried at a stove, the proportions being two parts of cocoa, two parts of sugar, and one part of moist gluten. The chocolate may be also prepared without any admixture with the acid.

Vermicelli may be prepared by means of any of the various breads already described. To manufacture it dry bread is used, and it is only after it has been submitted to the action of heat that it can be pulverized.

For gluten-bread made of Indian-corn flour, the same treatment must be adopted as for gluten-bread from wheat, with the addition of a leaven composed of two thirds of wheat-flour and one third of pure water.

Manufacture of Caoutchouc. J. H. Johnson, London and Glasgow.—This French invention, which has been patented in England on behalf of MM. Guibal & Cumenge, relates to the recovery and utilization of the volatile ingredients used in dissolving caoutchouc in the process of manufacturing it, instead of allowing these ingredients to be lost by evaporation. This great saving is effected by placing the soft caoutchouc upon traversing cloths in closed chambers, provided at the top with a means of condensing the vapors, and carrying off the products, the material being heated by suitable apparatus beneath the traversing cloth. The caoutchouc, as it leaves the spreading rollers, is traversed over a horizontal table, consisting of upper and lower cast-iron plates, with an intervening place for the introduction of steam, hot water, or heated air. This table is covered in by a roofing of metal plates, set at convenient angles, the chamber being closed in at each end by triangular metal plates, placed vertically. The roof is covered with felt, which is kept constantly saturated with cold water, supplied by a duct above, and which is again collected by gutters running along the lower edges of the roof-plates. The vapor rising from the material is condensed upon the under sides of the roof-plates, and, trickling down, is collected in suitable gutters; these gutters being carried completely round the chamber, and across the end-plates, so as to prevent any of the products of condensation from falling upon the caoutchouc beneath. The gutters communicate with suitable receptacles, into which the condensed matter passes; and this matter can be used over again repeatedly in the manufacture of the caoutchuc, thereby considerably reducing the cost.

Journal Bearings. A. Barclay, Kilmarnock.—With a view of economizing the oil used in lubricating the journal bearings of horizontal shafts,

by enabling it to be repeatedly refused, Mr. Barclay has designed the improvements forming the subject of the present patent, and which, by preventing the too rapid escape of the lubricating oil from between the rubbing surfaces, also renders the lubrication of the shaft much more efficient. In carrying out this invention, according to one modification, the shaft is formed with a projecting collar upon it, of the length of the intended bearing, and the brasses are formed to suit this modification. Each brass extends considerably past each edge of the collar, and is slightly turned out or recessed, so that the angles of the collar shall be slightly overlapped by the brass. Beyond this overlap on each side, the extension of the brass is hollowed out internally, to form an annular cup for the reception of oil, and these edge-cup pieces are well overhung, and brought close to the plain part of the shaft to prevent the entry of dirt. The inner face of the upper brass is inclined upwards from each side towards the centre, instead of being square across as usual; and the result is, that the oil supplied from the top, in the usual way, is well spread over the frictional surfaces, and, flowing down, it is caught by the annular cups of the brasses, and retained therein for continued use; or the same effect may be obtained by beveling the inner edge or edges of the inner brass alone, the upper brass being made square across, as usual. The continued use of the oil is effected by the action of the bearing collar on the shaft, for, as this revolves, its edges gather films of oil from the annular cups, and bring up the oil so collected to the top brass. Here the revolving collar edges apply the oil to the corresponding edges of the upper brass, and, owing to the duplex interior incline thereon, the oil is thence conveyed towards the centre of the bearing, whence it is well distributed over the whole rubbing surfaces. Instead of a plain collar projection, other forms of journals may be employed with the same result, or a couple of rings may be set fast on the shaft, so as to carry up the oil in a similar manner.

New Mordant in Dyeing.—A Swede named Rydin, has published a method of obtaining a fine blue, of excellent tint, for cotton, by employing as a mordant the oxide of chromium, dissolved in an acid; in place of this oxide, a double salt may be used, such as the double sulphate of chromium and potash. This salt is obtained by mixing one part of a solution of bichromate of potash, and one part and a half, or two parts, of sulphuric acid. Alcohol, sugar, or any other substance capable of converting the chronic acid into an oxide of chromium, may be added. The oxide is added to a decoction of logwood, and the dyeing may be effected in one operation, by putting together the salt, the decoction, and the cotton, and heating the whole. Or the cotton can be treated with the salt, hot or cold, and may then be placed in the decoction until the desired color is obtained. By varying the proportions of the salt to the decoction, very delicate shades of gray and lilac may be obtained.

Dock Railway, Liverpool.—At the last meeting of the British Association, there was exhibited a large model of a high level railway, which it is proposed to carry along the east side of the whole line of docks at Liverpool. The construction will consist of iron frame-work supporting two platforms. The lower will be about 52 feet wide and 20 feet above the present quays, designed entirely for goods traffic, having four lines of railway—the two nearest the docks to be used as sidings for trucks while loading and unloading, and the other two as up and down lines for trucks in motion. The upper platform is to be about 23 feet wide, and to have two lines of railway, intended for passengers only. The lower platform will be provided with

hydraulic cranes, which will transfer goods either from or to the vessels or the trucks, as well as work through the hatchways in the platform to the quays. The scheme embraces the construction of deposit and transit-sheds, a connection with existing or future railways, and with private warehouses, and the erection of passenger-stations. The great thoroughfares will be crossed by bridges, and the line will be equally applicable for horses or locomotive power. The cost is estimated at less than £250,000 a mile. This includes hydraulic cranes and platforms, with stationary steam power to work them. On the other hand, it is calculated that the value of the quay space gained by the platforms of the railway, at the low rate of £5 a yard, will yield a return of about £210,000 a mile, not much below the estimated expenditure.

Effect of Light upon the Compass.—Attention was called, by Sir John Ross, at Liverpool, to the omission of any notice in the Admiralty Manual of Scientific Inquiry, of the effect which light exerted upon the magnetic needle. The Swedish philosopher, Wrede, totally excluded light from his magnetic observatory, with the exception of a subdued light at a considerable elevation vertical to the horizontal needle, while the arc was read off by a telescope, at a distance of several yards from the instrument. Means, with the same end in view, ought to be adopted in every magnetic observatory; otherwise, no reliance could be placed on the observations. It was evident that the more deliberately the magnetic needle was suspended, the more obnoxious it would be to the effect of artificial light in the operation of reading off the instrument. In proof of the effect of every description of light on the magnet, Sir John mentioned that, during his last voyage in the *Felix*, when frozen in about 100 miles north of the magnetic pole, he concentrated the rays of the full moon on the magnetic needle, when he found it was five degrees attracted by it.

Twin-Dredger of Thirty Horse Power. By J. W. Hoby & Co., Engineers, Renfrew.—This powerful dredging machine was constructed for the Commissioners of Leith Harbor, the designs furnished by the makers being approved of by Mr. Rendel, the engineer. It has been a very successful machine, its performances being at the rate of 1840 tons discharged per day of ten hours. A deviation from the ordinary system of construction was adopted in it, on account of certain peculiarities of the locality for which the dredger was destined.

The hull is of plate-iron, and is ninety feet long, thirty feet wide, and eight feet six inches deep. A large well is formed in the centre of the vessel for the passage of the two endless chains of buckets, and for the introduction of the ladders upon which the buckets are supported. These ladders are upheld at one end by the main shafts, by means of which the buckets are driven, the other extremities of the ladders being slung to a hoisting apparatus at the other end of the vessel, so that they may be elevated or lowered to suit the level of the bottom to be deepened. The machinery is driven by a pair of oscillating cylinders, each twenty-five inches in diameter, and placed immediately below the main driving shaft, which is at the upper end of the bucket-ladders. These cylinders are supplied with steam from two boilers near the longitudinal centre of the vessel, and placed one on [illegible] sections, on the central well. The motion is first communicated to a tr[illegible]n slightly beyond shaft immediately over the steam-cylinders. This sh[illegible] carrying the worm-heavy fly-wheels, and has bevel-pinions upon its over[illegible]wheel, and this move-nected to it by frictional couplings, so as to yield[illegible]ver, sets this lever to its

These bevel-pinions gear with bevel-wheels keyed upon vertical shafts, which carry bevel-pinions upon their upper ends in gear with large bevel-wheels on the main driving-shafts. The bevel-pinions on the upper ends of the vertical shafts can be engaged with, or disengaged from, their shafts by means of adjustable clutch-boxes. Connections are likewise provided to enable the engines to drive the several winches for lifting the lower ends of the bucket-ladders, for warping the vessel into a new position, and for other purposes.

The sand or mud raised by the buckets is discharged into a shoot or duct of plate-iron, which conveys it into the pontoon-hopper, or lighter, placed across the end of the vessel to receive it.

Patent Hydrostatic Cranes. By J. Robertson, Engineer, Ardrossan.—These hydrostatic machines will be found useful in the operations of the civil engineer, and in engineering work-shops, in all cases in which heavy bodies have to be lifted or moved, and particularly where, from the nature of the ground or the position of the object to be lifted, it is difficult to apply ordinary winch or crane power. One of these cranes can be attached as easily as the ordinary block-tackle, whilst it has the advantage of being worked so as to exert its full power directly in the line of the centres of attachment, the machine simply acting as a contracting connecting link in the lifting-chain with no lateral strain whatever, such as is occasioned by the drawing end of the rope in block-tackles.

In common with all machines of this class, great power is obtained in a very small compass, and the working of it can be easily changed to suit the load, a quick speed being employed for a light body, and a slow speed with great power for a heavy one.

The essential feature of the apparatus is the use of a working cylinder, of the pendulous kind, fitted with a piston to be actuated by water pressure. For example, in a warehouse or work-shop, the working-cylinder may be slung or suspended, in an inverted position, from any convenient over-head beam, by a rope, link, or joint attached at its closed end. In this way the piston-rod works through a stuffing-box at the lower end of the cylinder, and the projecting end of the rod carries a hook, or other connection, for attachment to the actual hauling-chain. The actuating fluid is conveyed into the cylinder by a flexible pipe, so that the vibration of the cylinder can not affect the pressure flow. By attaching a suitable valve to the working-cylinder, the pressure fluid may be directed to either side of the piston, so that the upper end of the cylinder answers as a convenient reservoir for the fluid. The fluid pressure may be obtained from various sources, as from natural head-columns, or from pumping apparatus; and in using pumps, these details may be either at a distance from, or attached to, the side of the working-cylinder. Where long strokes or lifts are required, this may either be effected by suitable pulley or lever arrangements in connection with the working piston-rod, or by the adoption of a telescopic arrangement of the working-cylinder, one cylinder being placed inside the other, the traversing-cylinder inside the external one being formed to work as a piston; this internal cylinder again having a piston within it, so that a long stroke is obtainable from this duplex action; and, instead of using one cylinder only as the lifting movement, two or
signed entire
suspended side by side. Travelling cranes may also be con-
nearest the docks
inciple, the working-cylinder in such case being disposed
ing, and the other
the cross-beam of the crane-framing, and being imme-
platform is to be ab
traversing carriage, so that the lifting apparatus can
intended for passengers
at will, to suit the requirements of the time, whilst

the travelling frame itself further adds to this power of removal; such a carriage may also have upon it the actuating pump. In such hoisting apparatus, the stop-valve of the lifting-cylinder, by holding the fluid-column, acts as a certain holder of any weight which may be upon the crane. Such cranes are made to indicate the weight upon them, by attaching to the main working-cylinder a smaller cylinder bored to two slightly different diameters. A single piston-rod has upon it two pistons, one for each of these two diameters, and the working fluid from the main cylinder has access to the space included between these two pistons. The difference in the area of the pistons being extremely slight, the larger piston is caused to traverse, in proportion to its greater area, against the resistance of a spring fastened to the piston-rod. This rod carries an index bearing upon a graduated scale, and the suspended weight is thus at once pointed out.

Mining Engines and Machinery. A Barclay, Kilmarnock. *Patent dated March* 2, 1854.—A portion of the improvements comprehended in this patent relate to the so arranging the winding engines of coal and other mines, that they may be more safely managed than at present, whilst all chance of "over-winding" and injury to the mining mechanism may be avoided. These improvements are effected by adapting the ordinary and well-known "link motion" to the hand-gear of the engine, so that the attendant can easily stop and reverse his engine at the exact moment required in the action of winding. To do this, the engine-man has only to work a hand-lever up or down; and this lever being suitably connected with the "link-motion," correspondingly affects the portion of such motion, and thereby either stops or reverses the engine, as is at present done in locomotive and marine engines. By such a system of gearing, the motion is entirely unbroken, and the attendant has always a safe and perfect command over his engine; and to add still further to the safe working of the system, a self-acting movement is contrived to come into play at the precise moment required, for the purpose of stopping or reversing the engine, in case the engine-man should be careless or absent at the proper time. For this purpose a tumbler is so connnected with the engine or winding mechanism, that it shall be slowly wound up, or elevated to its falling centre, at the time that the motion of the engine is to be changed. Thus, as this tumbler falls over, it acts through suitable connections upon the reversing or stopping-link, and effects the intended movement. Various means may be adopted for securing the self-acting effect, disengaging pins or stops being so set as to actuate the link-movement at the proper time.

As adapted to direct-acting horizontal cylinder winding and pumping engines, for instance a small shaft passes away back from the main-shaft to the steam-cylinder, at which end this small shaft carries a worm in gear with a worm-wheel set on a horizontal stud. This wheel has a ring-groove in its side to receive adjustable stud-pins, which are set at the proper distances in the wheel, so as to act upon the adjusting lever of the valve-link motion. Provision is also made, by a separate adjusting slide or bolt, for allowing the engine-man to set the engine to go constantly in one direction, as when used for pumping. When so set the adjustable-pins of the worm wheel no longer affect the engine, so as to set the valves for back or forward actions, or the up and down winding. Should the engine accidently run slightly beyond the intended point, an eccentric piece on the stud-spindle carrying the worm-wheel acts upon a sliding piece carried round by the wheel, and this movement, acting upon the under side of the valve-link lever, sets this lever to its

central position, so as to prevent the return of the engine. These gearing details are obviously capable of being modified in various ways, and the arrangements are suitable for beam or other kinds of engines. To prevent accidents from the main gearing getting disengaged, a friction-brake apparatus is provided, to stop the engine's movement. Thus, should the wheels fly out of gear—owing, for instance, to the attendant's leaving out the fastening-key when changing from pumping to winding—this friction-strap will be brought into play to prevent the engine from running away. The brake-pulley is set upon the shaft, which is liable to slip back, and being loosely encircled by a friction-strap, the lateral traverse, owing to the disengagement, makes the pulley press itself hard against the interior of the strap. This strap encircles three fourths of the wheel, and is workable as well from both its ends. These two opposite ends are each connected to one of the two opposite cages, that is, the ascending and descending cages. For instance, when one of the cages arrives at its proper stopping point, it acts upon a pin or stop in connection with one end of the friction-strap, and draws the strap tight around the pulley in the direction of the revolution of the pulley at the time being. Hence, whichever way the engine is running, the friction-strap has a tendency to be forced down into frictional contact by the pully movement when once started. The engine-man can also work such friction-brake by a separate hand or foot-gear movement.

Lappet Loom. J. Smith, Glasgow. *Patent dated February* 21, 1854. —This invention relates to the manufacture of goods of the "lappet" class, a portion of the improvements being in substitution of the ordinary pattern ratchet-wheel, whilst the usual "whip" rolls are superseded by another branch of the invention. Instead of the pattern-wheel, a small cylinder or barrel is used, carrying an endless chain, composed of small slips of wood, gutta percha, or other material capable of being shaped to the required form of link, and hard enough to withstand the working action. Or, instead of this contrivance, a framework, or combination of plates, or slips of iron, wood, or other material, may be used, such pieces being acted upon by a cylinder with perforated cards, so as to produce the required pattern, by acting upon the usual figuring mechanism of the loom. This movement is on the principle of the jacquard. In the endless chain arrangement, the links of the chain are formed and arranged to suit the intended pattern to be woven. The pattern, or figure, is engraved or formed, either in *intaglio* or in *relievo*, upon the external face of the chain, as many lines of pattern, or figure, being used as there are needle-frames. These pattern-lines extend continuously over the chain, and a pike, or catch, from each needle-slide, is connected with, or enters into, each of such pattern-lines. The endless chain is made to traverse to suit the loom action, and the needle-frames, governing the figuring movements, are thus made to traverse for the figuring action. In addition to this movement, the endless chain carries a secondary figure actuating a set of cranked pieces, which communicate with the lines of needles, so as to throw in or out such sets of needles as the pattern may require.

In dispensing with the "whip" rolls, the cops, or bobbins of whip material, are applied directly to the loom. This whip-yarn is used, either twisted, or in its natural untwined condition, and as many ends or lines of yarn are passed up in combination from the cops, as may be necessary for the production of the required figuring-thread. These lines of yarn, in passing from the cops, are kept at a regular even tension, by being passed between fric-

tional spring-holders, or elastic clips, so as to dispense with any other mechanism, the yarn being guided uniformly to the fabric as the weaving goes on. The improved processes considerably extend the capabilities of the lappet loom, affording a greater horizontal range for the needle-rods, so that an increased number may be used with convenience. Thus a greater width, or greater complexity of design, is easily attainable, whilst any length is secured by adding to the chain or to the perforated cards.

Steam Boiler Apparatus. J. Houston, Glasgow.—These improvements consist in regulating the supply of steam-boilers by the aid of a float, acting by means of suitable connections, passing through the boiler-case upon the stop-cock of the water-supply pipe. In marine boilers, this float is made to work in a chamber or casing communicating with the main boiler space by a small aperture, so that any motion of the mass of the water in the boiler may only affect the float very slightly. Another branch of the improvements relate to the adjustment of the flue-damper of a steam-boiler furnace, by means of a piston acted upon by the steam pressure, and arranged to open or shut a water-supply cock in connection with the damper movement.

Musical.—Grisi and Mario, New-York Philadelphia, and Boston. Those who have not heard these renowned artists, know not what they have lost. Mario, as a tenor, certainly has no superior, among all whose fame has reached us, and no equal has appeared in this community. But Grisi stands far above competition. As a vocalist, she has few equals; as a tragic actress, she has at least no superior. Certainly, the union of so great power in these two departments, gives her a prominent place among the most eminent artists in the history of the stage. She honors her profession—never descends to clap-trap and trick. She has fewer ornaments than many of our own vocalists, and therein she proves her greatness. Like Sontag, she dares to sing a simple melody as it is written. Every time she is listened to in tragic opera, she gains in her power over you. We shall never probably be favored with such an opportunity again. As we write this, these artists are announced as soon to appear in Philadelphia and in Boston. We charge every one of our readers who can appreciate the music of the opera, in the very highest style the world has known, to take the earliest opportunity to hear them.

The Orange Water-Melon.—Mr. Peabody, editor of the *Soil of the South*, Columbus, Ga., has lately introduced a new kind of water-melon, and which, from its singular properties, he calls the orange water-melon. By cutting the rind, as you peel an orange, the entire skin may be taken off, leaving the pulp unbroken, which, with a little care, may be divided as you would an orange. The flavor is said to be very fine, and it has proved itself perfectly hardy in this State. Mr. P. will, on receipt of a dollar, forward pre-paid packages of the seed.

General Agency.—The publisher of *The Plough, the Loom, and the Anvil*, believing it in his power to be of essential service to the readers of that journal, in the purchase or sale of various articles, and the transaction of various kinds of business, would announce to them that he is ready to execute any such commission which he may receive, including the purchase of books of any description; implements connected with agricultural, manufacturing, or mechanical operations; artificial manures; farm and garden seeds, etc., etc. One of the gentlemen connected with the journal is a proficient in music, and experienced in the selection of piano-fortes, flutes, etc., and will execute orders in that department.

He will also act as agent in the purchase and sale of Real Estate.

☞ Particular attention to business connected with the Patent-Office.

Letters of inquiry on these matters will be promptly attended to.

☞ School-Teachers. — Having had occasion to furnish teachers for some of our Southern friends, we have been fortunate enough to learn of several young ladies who are admirably well qualified for families or schools, and if any are in need of such, a letter addressed to us will receive immediate answer. We shall not fear to guarantee that any reasonable expectations will be fully met. Some of them are desirous of going South.

NEW BOOKS.

Literary Recreations and Miscellanies. By John G. Whittier. Boston: Ticknor & Fields. 1854. 431 pages.

Mr. Whittier's numerous friends will be highly gratified with this collection of prose and poetry, by this gifted author. Most of the pieces have already appeared in various journals, but being selected from a large number of his writings, published at different and distant times, they may be regarded as possessing, in the writer's view, peculiar merits compared with others that were passed by, and as especially illustrative of his peculiar but highly cultivated mind. The volume is handsomely executed, and does honor to the enterprising publishers.

Memorable Women, the Story of their Lives. By Mrs. Newton Crossland. With eight illustrations by Birket Foster. Boston: Ticknor & Fields. 1854. 355 pages.

This book will be read with great interest. It describes women, several of whom were very prominent in their day, and whose characters and social position secure for them universal regard. Among them are Lady Rachel Russell, Mrs. Thrale, Fanny Burney, etc. Their biographies introduce us to the most learned and most celebrated circles of those times, and give an insight into the private life and manners of some of the most cultivated minds in England.

Home Stories.

John P. Jewett & Co., Boston, have recently published a series of four small volumes, for children, written by Phœbe Harris Phelps, which are handsomely printed and neatly bound, as follows:

Henry Day Learning to Obey Bible Commands.
Henry Day's Story-Book.
Mary Day Forming Good Habits.
Mary Day's Story-Book.

These stories are well-written and short, and each inculcates very clearly some important moral or religious truth. The plan is excellent, and is very well executed. With juvenile libraries consisting of books like these, and the little work below, in all our schools, we might anticipate no small improvement in the conduct of our children.

ROSE AND LILLIE STANSBURY; or, the Power of Conscience. By M. J. McINTOSH. New-York: D. Appleton & Co. 1854.

THIS little book is a gem. Not a line of it needs mending; not a paragraph could be spared. The story is well devised for illustrating the necessity of conscience, and its tremendous power, when properly enlightened, over the conduct of children. Parents and teachers might read this story with great profit. No juvenile or Sabbath-school library should be without it.

SABBATH MORNING READINGS IN THE OLD TESTAMENT. By Rev. JOHN CUMMING, D.D., F.R.S.E., Minister of the Scottish National Church, Crown-Court, Covent Garden, London. Book of Genesis and book of Exodus. Boston: John P. Jewett & Co. 1854. pp. 385 and 371.

THESE volumes contain the substance of the exposition of the Scripture lesson of the morning service, to his own people. His object is not so much learned criticism as the solution of difficulties, and to impress the truth of the passage on the heart and mind and conscience. We need not say that the plan is ably carried out. In fact, these volumes are exactly what the intelligent reader of the Bible needs, and the want of which has been seriously felt. It is not a dry, doctrinal skeleton, but living Scripture truth, ably set forth, and will secure the attention of every intelligent reader. For sale by Jewett, Proctor & Worthington, Cleveland, Ohio; and Sheldon, Lamport, & Blakeman, New-York.

AMABEL; a Family History. By MARY ELIZABETH WORMELEY. New-York: Bunce & Brother.

THIS is a remarkable book. In every part of it, the story excites the deepest sympathies of the reader. The character of Amabel is drawn with great skill, and is well sustained from beginning to end. The plot is quite complicate, but the progress of events seems perfectly natural, and the story has an air of truth and reality quite unusual in this kind of literature. Some of the scenes exhibit great power, especially near the close of the book. The account of the storm and wreck it would be difficult to match from any female writer. The story is rather a sad one; but there are generally palliating circumstances, or, at least, there is a bright light in the distant future, relieving the darkness of the past. The final scenes are very adroitly conceived, and equally surprise and delight the reader.

We may certainly be proud of some of our female writers.

INVESTIGATION OF THE ALLEGED OFFICIAL MISCONDUCT OF THE LATE SUPERINTENDENT OF THE PHILADELPHIA, WILMINGTON & BALTIMORE RAILROAD CO. Vol. I. Phonographically reported by ARTHUR CANNON. Philadelphia. 1854.

THIS ponderous volume of more than a thousand octavo pages, besides seventy-two pages of appendix, contains the evidence adduced by both parties to this controversy, before a committee appointed by the Board of Directors of this Company to make such investigation. At the close of the text, we find, "The testimony being concluded, the Committee went into private session." When they report their proceedings, probably the second volume will be issued.

TRANSACTIONS OF THE NEW-YORK STATE AGRICULTURAL SOCIETY; with an Abstract of the Proceedings of the County Agricultural Societies. Vol. XIII., 1853. Albany. 1854. 783 pages, 8vo.

WE tender our thanks to Mr. Johnson, the Cor. Secretary of this Society, for this valuable book. We shall avail ourselves of its highly useful information in our future numbers.

THE BIOGRAPHY OF SELF-TAUGHT MEN; with an Introductory Essay. Boston: Perkins & Whipple. 1850 and 1852.

Two small volumes have been published at different times. One volume was prepared almost entirely by that accomplished scholar, the late B. B. Edwards. In this, twenty-seven distinguished characters are given, and eighteen in the second volume. We need not say that they are well written, nor that they are worthy of notice. We commend them to general attention, and especially to young men, for whom these examples are peculiarly profitable. Fine likenesses of Nath'l Bowditch and of Roger Sherman form the frontispiece. The successors of these publishers are the firm of S. K. Whipple & Co., 160 Washington street.

ROMANISM IN AMERICA. By Rev. RUFUS W. CLARK. Boston: S. K. Whipple & Co. 1855. 271 pages.

THE title describes the character of this volume. The origin and progress of Romanism, its principles, etc., as contrasted with Protestantism, are described in Mr. Clark's pleasing style. It discusses also, at length, the propriety of the claims of this denomination in reference to school-books and kindred matters. So far as we have examined it, it is free from the use of opprobrious language, and shows a candid, kindly spirit. These subjects deserve investigation, and indeed demand not only consideration, but decisive action.

THE SCIENCE AND ART OF ELOCUTION AND ORATORY; containing Specimens of the Eloquence of the Pulpit, the Bar, the Stage, the Legislative Hall, and the Battle-Field. By WORTHY PUTNAM, Professor of the Science of Elocution, and Practical Instructor in the Art. Auburn and Buffalo: Miller, Orton & Mulligan.

THIS is a good selection from the best of authors, from Mrs. Sigourney to Daniel Webster. It is in three parts. Part 1st, theoretic and scientific, contains rules and principles, illustrating the organs of speech, the elementary sounds of the language, inflections, attitudes, etc., occupying about fifty pages. The 2d part is rhetorical, classical, and poetical, one hundred and fifty pages; and the 3d part, comical and musical, another hundred pages. The volume is well printed and bound in cloth. For sale by Appleton & Co.

THE COMPLETE MANUAL FOR THE CULTIVATION OF THE STRAWBERRY: with a Description of the Best Varieties. Also, Notices of the Raspberry, Blackberry, Currant, Gooseberry, and Grape, with directions for their cultivation and the selection of the best varieties. By R. G. PARDEE. With a valuable Appendix containing the observations and experience of the most successful cultivators of these fruits in our country. New-York: C. M. Saxton. 1854. 144 pages.

THIS long title tells its own story. It is the result of actual experiments, long and carefully tried both in Northern and Southern climates, and deserves the attention not only of the amateur, but of the professional gardener. Price, 50 cents.

PRACTICAL MECHANICS' JOURNAL. Glasgow.

THE recent numbers of this journal have been received, and they commend themselves to the attention of all mechanics. The chapters devoted to American patents are full and scientific. Stringer & Townsend, Agents.

HARPER'S GAZETTEER OF THE WORLD.

WE have already commended the earlier numbers of this able work to the attention of our readers. The first six have been laid on our table. They are admirably executed. The matter is well digested. The statistics are so condensed as to comprise much information in a small compass. Ten numbers are to complete the set. Price, 50 cents each number.

RUTH HALL; a Domestic Tale of the Present Time. By FANNY FERN. New-York: Mason Brothers. 400 pages.

THIS volume is peculiarly a family story. The heroine, her parents and brother, her husband and his parents are the chief characters. They are skillfully drawn, and some of them are decidedly *rich*. But the book is peculiar. The author appears to have seated herself to this tale, with the single view of exhibiting every one of these relatives in the most odious light possible, while the heroine is lauded to the skies. Unlike other writers of fiction, who are content to allow actions to speak for themselves, she interrupts her narrative to introduce accumulative testimony to the meanness and cold-heartedness of these persons. She acts the part of a state's attorney in a criminal court, who endeavors to array all the witnesses he can find, to make out his prisoner as bad as he can. This peculiarity and certain well-known resemblances have led some to suppose that Fanny is the heroine of her own story. Nothing but personal antipathies, it is supposed, and not without reason, would lead one, in ordinary cases, to conceive such a plot, or to dishonor so holy relations, or to bring into ridicule religious professions, as does the conception which brought into being this story. We think she has erred also in her excessive commendations of the heroine, who, if a rational woman, must revolt at such gross flatteries. No friend was ever guilty of such fulsome stuff. But it may be that the whole is a work of fancy. If so, she certainly has a peculiar taste, peculiar ideas of filial affection, or, at least, peculiar modes of showing and inculcating it, as well as a

peculiarly unchristianized, not to say uncivilized, style of imagination. But in this age of morbid appetite for family scandal, whether real or imaginary, however they may affect her reputation as a woman, these very peculiarities will cause her book to be read, and will increase not only her own, but also the profits of the publishers.

LADIES' GUIDE OR SKILLFUL HOUSEWIFE; or Complete Guide to Domestic Cookery, Taste, Comfort, and Economy; embracing 650 receipts. By Mrs. L. G. ABELL. Thirty-Fifth Thousand. 1855. C. M. Saxton, New-York.

THIS little work contains almost every thing connected with the duties of a housekeeper, including directions for preparing meats, breads, cakes, puddings, pies, etc., for curing the diseases and dressing the wounds to which families are particularly exposed, and many other things that every body ought to know. All for 25 cents. Send for it.

ANNUAL ILLUSTRATED REGISTER. C. M. Saxton.

A VERY pretty annual, well worth the 25 cents at which it is sold.

AMONG the many elegant and valuable Books for Holiday Gifts, published by Messrs. R. Carter & Brothers, 285 Broadway, may be found the following:

THE AUTO-BIOGRAPHY AND REMINISCENCES OF THE REV. WILLIAM JAY. 2 vols., 12mo, $2.50. In 1 vol, full gilt, $3; half-calf, $3; full calf, $4.50.

"Few names are so extensively known in the Christian communities of Great Britain and the United States as that of William Jay. His Morning and Evening Exercises is in the great majority of Christian families. The Auto-biography is written in a style of great simplicity and pleasantness. The reminiscences, by Mr. Jay, of prominent individuals with whom he was well acquainted—as John Newton, Richard Cecil, Robert Hall, William Wilberforce, and others, are graphic and entertaining, and replete with anecdote."

EVENING HOURS WITH MY CHILDREN; or, Conversations on the Gospel Story. Illustrated with twelve large Illustrations, (quarto size,) colored and plain.

KITTO'S DAILY BIBLE ILLUSTRATIONS. 8 vols., 12mo. Cloth, $8; in half-calf, $12.

"The design of the writer is to seize upon passages of Scripture that are obscure, or difficult to be understood, particularly from their allusions to ancient places or customs, or persons or things, and throw upon them the light of history. Beginning in the first volume, with the Antediluvians and Patriarchs, the reader is led on, day by day, through the historic records of Moses and the Judges, Saul and David, Solomon and the Kings, Job and the poetical writers, Isaiah and the Prophets, and thence to the New-Testament characters and times, everywhere gathering new facts, and discovering the breadth and beauty of new truths."

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THIS is one of the best popular treatises upon the external evidences of Christian Faith.

THE LAND OF THE FORUM AND THE VATICAN; or, Thoughts and Sketches during an Eastern Pilgrimage. By NEWMAN HALL, B.A.

THIS is a truthful record of the author's impressions and opinions formed by a careful study of scenes and places that he visited, and in his best style of composition.

FRITZ HAROLD; or, The Temptation. By SARAH A. MYERS.

JESSIE MORRISON; or, the Discipline of Life. By the Author of "The Pastor's Family.'

WORDS TO WIN SOULS. Twelve Sermons preached in 1620 and 1650. By Eminent Divines of the Church of England. Revised and abridged by the Rev. THOMAS S. MELLINGTON.

THE MILLINERS' AND DRESS-MAKERS' GUIDE.

THIS work is issued on the first of every other month, at $3 per annum, by Samuel T. Taylor, 407 Broadway. Mr. Taylor enables the subscriber to cut and make dresses from diagrams sent with the work. It is richly embellished with four large colored fashion plates in each number, obtained directly from Paris. The Maryland Institute and the Crystal Palace have awarded Mr. Taylor Prize Medals for the excellency of his system of cutting, as taught in the Guide. We commend the Guide to all housekeepers and others having families, as one of the most useful and practical publications of the day.

PETERSON'S LADIES' NATIONAL MAGAZINE.

MRS. STEPHENS, the editress of this popular monthly, is a lady of great talent, and the writer of several very valuable books, which are eagerly sought for by the reading public. Her magazine, which is produced with much taste, is filled with choice reading, at a reduced rate of subscription, only $2 per annum. Should the reader desire other literary works of a popular character, he will find a supply rarely surpassed in richness and variety, at Peterson's, 102 Chestnut street, Philadelphia, the publication office of the Ladies' National.

ARTHUR'S HOME MAGAZINE.

THE idea conceived by Mr. Arthur a few years ago, of imposing the reading matter of his Gazette in the form of a monthly, seems to have taken well with the public. This magazine is among our most popular periodicals, and we take pleasure in commending it to our readers. It is richly embellished, and furnished at $2 a year.

THE LIFE OF HORACE GREELEY, Editor of the New-York Tribune. By J. PARTON. New-York: Mason Brothers. 1855. 442 pages.

THERE are many things in the framework of this book which we should regard as of doubtful expediency, and there are opinions defended, incidentally, for which we have no sympathy. But, on the whole, the plan adopted gives a more thorough view of the man than any other. It is not a eulogy, but a plain narrative. The history of Mr. Greeley necessarily includes a history of the daily press in this city, and throws much light on the history of political parties during a period of many years. Much of the volume would be very entertaining to all parties, and no one can read the whole without the conviction that, however erroneous his views may be regarded, he is at least honest, thoroughly honest; and a life more persevering, untiring, and unyielding, even in the face of formidable obstacles, without the aid of friends or patronage, is seldom the subject of any biography. A true friend of the working classes, which is, in fact, synonymous with being the friend of the whole community, he certainly is; and if his advice is not always the best, we but have in this fact, the evidence that he is not infallible. His boyhood and youth may be a useful example to others in that period of life, and is a severe commentary on the utter failure of thousands who have utterly failed with vastly greater facilities for winning the prize.

GODEY'S LADY'S BOOK.

THE January number of this journal, received in advance of its date, furnishes abundant evidence of the determination of the publisher to deserve the reputation which he has already secured, and the extensive patronage he has long received. His illustrations are abundant. Terms, $3 a year.

THE LAND OF THE SARACENS; or, Pictures of Palestine, Asia Minor, Sicily, and Spain. By BAYARD TAYLOR. New-York: G. P. Putnam & Co. 1855.

MR. TAYLOR'S extensive travels in the most remarkable countries on the globe furnish him an inexhaustible supply of material for interesting narrative. This volume is the second portion of a series of travels, of which the "Journey to Central Africa," already noticed, is the first part. No portion of his travel is more fruitful of interesting topics than this. A few titles of his chapters furnish proof of this. For example: 2. The Coast of Palestine; 3. From Jaffa to Jerusalem; 4. The Dead Sea and the River Jordan; 9. Pictures of Damascus; 10. The Visions of Hasheesh; 31. The Eruption of Mount Etna, etc., etc. We need not say Mr. T.'s peculiar gift in description especially qualifies him for such work, and guarantees fresh interest even where numerous travellers have preceded him.

MR. RUTHERFORD'S CHILDREN. 2d vol. New-York: G. P. Putnam. 1855.

THIS volume is intended for "Ellen Montgomery's Book-Shelf," and is by the author of "The Wide, Wide World," "Dollars and Cents," etc. The first volume was published some years ago. It is very handsomely printed, and is done up in very neat binding, for a gift-book. The contents are sprightly and entertaining.

THE SHAKSPEREAN ORACLE. Edited by JOHN CRUGER MILLS. New-York: Bunce & Brother. 1855.

THIS is a very neatly executed little volume of 147 pages, more especially designed for young ladies and young gentlemen. Thirteen questions, of *very interesting nature*, in certain conditions of things, are each answered by a reference to any chosen one of fifty answers, all gathered from Shakspeare.

List of Patents Issued

FROM NOV. 14 TO DEC. 5.

Edwin Allen, of South-Windham, Ct., improvement in machinery for carving stone.

Levi B. Ball, Putnam, Ohio, improvement in mast-machines.

Wm. Brancroft, of Whiteford, Ohio, improvement in cultivators.

Henry Bates, New-London, improvement in slide-valves for the exhaust steam.

William Beebe, New-York, improvement in double cylinder boilers for hot-water apparatus.

Martin Bell, of Sabbath Rest, and Edward B. Isett, of Cold Spring Forge, Tyrone city, Pa., improvement in furnaces for making iron direct from the ore.

Wm. Bell, Boston, improved lamp-caps.

Job Brown, Lawn Ridge, Ill., improvement in cultivators.

Thos. M. Chapman, Oldtown, Me., improved device for adjusting mill-saws.

Matthias P. Coons, Brooklyn, multigrade iron fence.

Horace J. Crandall, East-Boston, improved method of adjusting vessels upon the keel-blocks of dry sectional or railway dock.

George Crampton, Worcester, improvement in looms for weaving figured fabrics.

Daniel Harris, Boston, assignor to John P. Bowker, Jr., of same place, improvement in sewing machines.

Jonathan Hibbs, Tullytown, Pa., improvement in ploughs.

Geo. Hodgkinson, Cincinnati, improved pegging-machines.

George T. Leach, Boston, improvement in the method of engaging and disengaging self-acting car-brakes.

Fras. Maton, New-York, improvement in breach loading fire-arms.

Wm. Morris, Philadelphia, improvement in omnibus registers.

Joseph Miller, Olean, N. Y., improvement in railroad car coupling.

Wm. Moore, Belleville, Ohio, improvement in grain-winnowers.

Alpheus Myers, Logansport, for tape-worm trap.

Alpheus Myers, Logansport, for tape-worm operation.

C. B. Normand, Havre, France, mode of controlling and guiding logs in saw-mills, without a carriage. Patented in England, 27th Oct., 1852. Patented in France, Nov. 5, 1852.

C. B. Normand, Havre, France, for improved method of hanging saws for mills.

C. B. Normand, Havre, France, for improved method of controlling the log for curved and bevel sawing. Patented in France, Nov. 5, 1852; English patent, Oct. 27, 1852.

Julius A. Peas, New-York, improvement in India-rubber over-shoes.

Charles A. Robbins, Iowa City, improved excavator and ditching plough.

Geo. D. Stillson, Rochester, improved excavating machine.

Wm. Stoddard, Lowell, for shingle-machine.

Jacob Swartz, Buffalo, improvement in grain and grass harvesters.

Benj. James Tarman, Philadelphia, improvement in machinery for stretching and drying cloth.

Orson Westgate, Riceville, Pa., for saw-gauge.

Leon Jarosson, Jersey City, improved method of constructing printing blocks.

George Bruce, New-York, improvement in casting types.

John A. Robling, Trenton, N. J., improvement in steam-boilers.

Michael Shimer, Union Township, Pa., improvement in railroad car-brakes.

James E. Simpson, East-Boston, for improvement in dry docks.

Thomas J. Sloan, New-York, improvement in casting metal window-sashes.

David G. Smith, Carbondale, improvement in running gear of railroad cars.

Mathew Stewart, Philadelphia, improvement in the manufacture of brushes.

Amasa Stone, Philadelphia county, for method of extinguishing fire in accessible places.

Thomas T. Tasker, Philadelphia, for mode of regulating the furnace of hot water apparatus.

James Taylor, Newark, N. J., improvement in covering cotton thread with wool.

Wm. D. Titus, Brooklyn, for improvement in lanterns.

Ellis Webb, Parkersville, Pa., for hydraulic ram.

Elbridge Webber, Gardiner, Me., improvement in churns.

Cyrenus Wheeler, Jr., Poplar Ridge, N. J., improvement in grain and grass harvesters.

Franklin Darracott, Boston, assignor to Geo. Darracot, same place, improvements in dry gas meters.

John Pepper, Jr., Portsmouth, N. H., assignor to the Franklin Mills, Franklin, N. H., improvement in knitting-machines.

Joshua Register, Baltimore, assignor to Elias Clampitt and Joshua Register, of same place, improved lubricating apparatus.

John W. Cochran, New-York, improved quartz-crusher. Patented in England, Nov. 21, 1853.

George Thompson and Merrell A. Furbush, of

Worcester, improvement in rollers for pattern chains for looms.

Jonathan W. Caldwell, Rochester, improved arrangement of lever and catch for tow-lines of canal boats.

Jno. Absterdam, Boston, Mass., improvement in lubricating the cylinders of steam-engines.

Clark Alvord, Syracuse, N. Y., for hand brick-moulds.

H. F. Baker, Centreville, Ind., improvement in papering walls.

H. F. David, Ipava, Ill., improvement in saucepans.

Chas. G. Everitt, Brooklyn, N. Y., improvement in machines for closing sheet-metal boxes.

Jas. Freeland, Allegheny, Pa., improvement in valve gear for locomotive engines.

Samuel Greene, Woonsocket, R. I., cleaning cards of carding-engines.

Adontram Kendall, Cleveland, Ohio, improvements in shingle-machine.

Jerome B. King, New-York, kettle for calcining plaster of Paris.

G. W. Lee, Ercildown, Pa., improvement in seed-planters.

D. B. Martin, Washington, N. J., improvement in packing slide-valves in steam-engines.

R. I. Nelson, Ocala, Florida, improvement in attaching life-preservers to vests.

Migbill Nutting, Portland, Me., for arrangement of pencils for drawing-machine.

Chas. Parham, Philadelphia, Pa., improvement in sewing-machines.

Wm. Perry, Graniteville, S. C., improvement in spinning-frames.

J. A. Roebling, Trenton, N. J., improvement in manufacturing wire rope.

Elliott Savage, Berlin, Ct., improvement in machines for threading screw-blanks.

J. L. Stevens, Kensington, England, improvement in furnaces. Patented in England, Oct. 1, 1852.

S. H. T. Tilghman, Snow Hill, Md., improvement in inhaling apparatus.

W. H. Towers, Philadelphia, Pa., for clothes-clamp.

T. W. Trussell, Winchester, Va., for improvement in dressing mill-stones.

Isaac Van Benschoten, New-York, improvement in lamps.

Milan Waterbury, Cuba, N. Y., improvement in seed-planters.

William Watt, Glasgow, North-Britain, improvement in hemp-rotting processes. Patented in England, May 22, 1852.

Mary Ann Loomis, executrix of Josh. G. Loomis, deceased, late of Philadelphia, Pa., (assignor to W. A. Gardiner, of Philadelphia,) for improvement in surgical forceps.

T. C. Ball, Shelburne Falls, Mass., (assignor to Nath'l Lamson,) for improved scythe fastening.

Harvey Snow, Dubuque, Iowa, (assignor to Jas. A. Woodbury, Winchester, Mass.,) improved presser bar for planing-machines.

Stephen Woodward, Sutton, N. H., (assignor to himself, J. P. Nelson, and A. C. Carroll,) improved apparatus for drying clothes.

Sylvanus Miller, Urbana, Ohio, improved rake harvesting-machine.

Alden Adam, Jerseyville, Illinois, improvement in hay and cotton presses.

Gotlieb Backstein, Philadelphia, improved arrangement of devices for applying power to fire-engines.

Jno. Cram, Boston, improvement in the towel-stand, or clothes-horse.

A. B. Crawford, Wooster, Ohio, improvement in clover-hullers.

Augustus Ellers, Boston, improvement in seats for public buildings.

Fletcher Felter, Perth Amboy, improvement in feathering paddle-wheels.

C. B. Gallagher, San Francisco, improvement in converting reciprocating into rotary motion.

Elias A. Hibbard, Winchester, Va., rotary cooking stove.

Jos. Hollen, White Township, Pa., improvement in knitting-machines.

Whitten E. Kidd, New-York, improvement in moulds for pressing bonnet fronts.

Daniel B. Martin, Washington, N. J., improvement in steam-boilers.

Angus W. McDonald, New Creek Depot, Va., improvements in tanks and cisterns for supplying locomotives.

Jordan L. Mott, Mott Haven, N. Y., improvement in stoves.

James Newman, Birmingham, England, improvement in making metal rods and tubes. Dated November 26, 1854. Patented in England, March 22, 1854.

A. D. Perry, Newark, improvement in breech-loading fire-arms.

E. K. Root, Hartford, improved machine for boring chambers in the cylinders of fire-arms.

Daniel H. Shirley, of Boston, improved piano-forte action.

Nathaniel Spence, New-York, improvement in moulds for pressing bonnet frames. Dated November 28, 1854. Ante-dated Nov. 10, 1854.

Wm. Talbot, Sandford, Me., improvements in looms for weaving bags.

Wm. Tinsley, Glenn's Falls, improved mitre-box.

Edward H. Tracy, New-York, inclined sliding-valves.

George Tugnot, New-York, improved rotary lathe.

Daniel Van Fleet, Sandusky City, planing-machine.

Wm. Wakely, Homer, improvement in metal drills.

Theodore E. Weed, Williamsburgh, improvement in sewing-machines.

Wm. Wheeler, Acton, Mass., improvement in washing-machines.

Henry Richards and Charles F. Winsor, Boston, improvement in windlasses.

Osgood G. Boynton, Haverhill, assignor to Nehemiah Hunt, of same place—improvement in binding guides for sewing-machines. Dated November 28, 1854; ante-dated June 1, 1854.

Thomas J. W. Robertson, New-York, assignor to himself and Alfred E. Beach, of same place—improvement in sewing-machines.

Arad Woodworth, 3d, Boston, and Geo. Chamberlin, Ocean—improvement in machinery for making rope and cordage.

Aaron H. Allen, Boston, for improvement in seats for public buildings.

Gardner S. Blodgett and Paul T. Sweet, Burlington, N. J., improved oven for baking.

P. Clark, Rahway, N. J., for improvement in steam-boiler alarms.

Horace J. Crandall, East-Boston, improved arrangements for reefing top-sails.

Joseph D. Crowell, Boston, improvement in steering apparatus.

Joshua Gray, Boston, for rotary pump.

John T. Hammitt, Philadelphia, improvement in railroad switches.

Samuel B. Kittle, Buffalo, improvement in railroad switches.

John Lilley, Birkenhead, England, improvement in machinery for separating the fibre from the woody portion of tropical plants. Patented in England, July 21, 1853.

Leonard F. Markham, Cambridgeport, improved machine for rounding the back of books.

Obadiah Marland, Boston, improvement in paper-making machines. Patented in England, September 26, 1854.

Wm. H. Miller, Brandenburgh, Ky., improvement in wash-stands.

Henry R. Miller, Louisville, improved mill for shelling and grinding corn.

Wm. H. Plumb, New-York, improved machine for crushing ores.

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No. 8. Feb., 1855. Vol. 7.

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The Acknowledged Standard!

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IRON SCALES, &C., &C.

New-York State Agricultural Society,
State Agricultural Rooms, Albany, Feb. 28, 1854.

At the Show of the Society, held at Buffalo, in September last, a *Cattle-weighing Machine* was erected by Messrs. T. & B. Fairbanks & Co., of St. Johnsbury, Vt. The Scales of Messrs. Fairbanks were selected as most likely to give satisfaction to the exhibitors of fat cattle. The judges appointed on miscellaneous articles awarded the first premium of the Society for the machine which was erected by them,—and the judges on fat cattle, who [illegible] intended the weighing of all cattle exhibited, expressed their approbation of the great accuracy of the mach[illegible]y.

BENJ. P. JOHNSON, [illegible]

Sold and Warranted by FAIRBANKS & Co., 89 Water Street, New-Y[illegible]

The Plough, the Loom, and the Anvil.

VOL. VII. FEBRUARY, 1855. No. 8.

ANNUAL FAIRS—THE POLICY OF, ETC.

Two months since, we gave our views, somewhat concisely, on the policy of these institutions. We have received one reply, which will be found in connection with these remarks, and which, we think, brings out distinctly the essential facts and principles which belong to the discussion of this subject.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

MESSRS. EDITORS: The benefits of agricultural fairs have become so well known among all classes, that a repetition of their valuable results among all classes, hardly need be made at present. Yet the manner in which they are conducted appears to claim more of the attention of the public now than the principle on which they are sustained. That fairs, both agricultural and mechanical, should always be held in connection with each other, all must see and admit at once. But their management in detail is another consideration, which we all are or should be interested in. Now, the question is, how to obtain from these annual "fairs" the greatest amount of good. During the last twelve or fifteen years, in connection with the "New-Haven County Society," we (with others that we could name) have had some experience in the management of "fairs," and the interest taken in them by the people. Our out-door exhibition was always held in such a way that it was "free" for all to look on and learn as much from the exhibition as they might feel disposed to. But that was not the end of it. When we came to foot up the expenses, and pay the "premiums," we always found ourselves "short" of means, and an empty treasury to begin the next year. By the in-door exhibition, which was held usually in connection with the "Horticultural Society," we obtained some six cents a member—a mere nominal sum. But as the out-door exhibition was "free" for all, it was a mere matter of fancy whether farmers became members or not; as in case they became members of the Society, they paid their "dollar;" if not, of course they paid nothing. Of course, all we had to depend on to pay our "premiums" were the amounts received from farmers who paid their dollar, except a small sum we received from the State on condition we raised the same sum in the county. If all, or even a majority of the farmers in the county would pay their annual dollar tax, we should then have means enough to pay the "premiums," and have a snug sum left to begin the next year. But as it was optional with farmers whether they became regular members or not, there was no dependence to be placed on the amount of means to be obtained in that way. Many farmers will pay their dollar if there is a chance of getting it back in a "premium," with two or three times as much. These ideas have led us to see that there must be some other plan adopted to raise means in order to make these

annual exhibitions permanently successful. The plan that has been adopted by some societies, of buying or hiring a piece of land of sufficient size and extent for the annual exhibition, is a good one. This plan, of course, will make the county exhibition a permanent fixture in one place, then the inclosing of the grounds with a substantial board fence, and erecting such buildings as are wanted for the present and future exhibitions. This plan, of course, secures an "entrance-fee" at the gates, which is right and just, as we understand it; and in this way a handsome sum can be raised to pay the "premiums," leaving, perhaps, a balance in the treasury to begin another year. When a State or county fair is holding its first exhibition, perhaps a twenty-five cent charge at the gates might not be out of place; but after this we think a twelve-and-a-half cent charge after the plan of the New-York State Fair, would eventually leave more money in the treasury than a higher charge. Of course, this plan of a permanent exhibition can not apply to a State society, as they must change the place of these exhibitions each season, according to circumstances. But as to free fairs for every body to look on without any expense, we have but little confidence in them. Of course, every reasonable man should understand that a "fair" can not be got up and sustained without much labor and a great deal of expense. And, further, they should understand that if a fair is worth any thing at all, it is worth paying for, and that this "tax" to support and sustain the fair should not come out of the pockets of the few, but from the hands of the many. Our experience has shown us that, when farmers have become interested enough in the "fair" to become permanent members, that then they would, in reality, begin to learn something from the exhibition. But as long as they stood as mere lookers-on, as "outsiders," it was a matter of indifference whether they gained any profit or not. And this rule, we believe, will hold good with the masses; that the extra "shilling" that is paid at the gate is, in reality, of no particular consequence; that if they go to the "fair" for the object of getting instruction and learning something, they can do so always.

It should be ever borne in mind that, to carry out these annual fairs requires a great deal of labor and much money. Hence the idea of carrying the "fair" into the "rural districts," among a sparse population, we think could only be thought of by having beforehand an overflowing "treasury" to start with. Because, when you get through with the exhibition, the "money" has got to be raised to pay off. If, after you have got through with the exhibition, you find that you have only means enough to pay the premiums, to say nothing of the current expenses, where are you? Echo will answer, "where?" Of course, it would be a very fine idea for every section throughout the State, if they could, once in a series of years, have the fair in their own locality; but then, as we said before, who is going to pay for it? It is very evident that, if these fairs are sustained at all, it must be done by the people at large. Then, if this be the case, it is very evident that the fair must go where the people are, or where they would be likely to come. Then again, it must be held at some point where the multitude can be accommodated for two or four days, or during the exhibition.

So it will be seen that all these ideas must be taken into consideration in locating the "fair" from year to year, in order to insure success. These ideas have been thrown out by seeing some remarks on the "Benefit of Fairs," in the December number of THE PLOUGH, THE LOOM, AND THE ANVIL. As we have said before, the idea of the spectator paying a small fee to see the exhibition, we consider of no consequence whatever, so far as the "looker-on" is concerned, although in the receipts of the treasury it might make a vast dif-

ference. We have found, in our experience, that farmers were even more indifferent toward becoming members of the society, where they could have the whole out-door exhibition open to every body, than when managed on the present plan. In regard to the general benefits of fairs, it is impossible to enumerate them; their name is legion, and it would require many sheets of paper to name them all. That there can be great improvements made in their management hereafter, no one can doubt. Still, in whatever way or shape these exhibitions are managed or held, all will depend on the people themselves, whether they learn any thing from the exhibition or not. They can spend their time to good advantage, or spend it in a listless, careless way, as they see fit. Yours, etc.,

Derby, Ct., December, 1854. L. DURAND.

We propose now to give these questions of policy a more careful consideration, and inquire—

1. Are fairs designed for the especial benefit of those who receive the premiums? Decidedly not. The premiums themselves are awarded, or rather are offered, to induce competition. But competition among whom? Among two or three of the best farmers in the country? By no means. This competition is for all, for the purpose of raising the entire mass of farmers, of emancipating farm-labor from the bondage of inefficiency, ignorance, misapprehension, and miscalculation, that the laborer may work wisely and efficiently on sound theories and correct principles, and become the MAN he ought to be.

Hence the premium is merely one of the moving agencies which are to give efficiency to the fair, and *may be comparatively unimportant.* It is one of the inducements held out to cultivators of the soil to improve their own husbandry. It has an effect; but to what extent?

Suppose no articles brought to the notice of the committees on premiums were to be seen by any body at the show. The animals are all confined in stables, and the specimens of crops grown are shut up in private apartments. None are allowed to look at any thing, except at the few choice specimens for which a premium has been awarded, while all these are arrayed in a very conspicuous place. How many tickets of admission could be sold? Scarcely one to a thousand. Nay, how many competitors for those premiums would there be? Not one where there are now a hundred.

Where were the crowds at our own State fair, last fall? Gazing at the few things which obtained the premium? No. Pressing to see the scores of roadsters in swift pace in the ring—perhaps fifty competitors to a prize; or listening to the explanations of the owner of some new machine, which was on exhibition; or thronging the tent filled with flowers and fruits, very few specimens out of hundreds obtaining any premium.

Nay, more than this. If every article to which a premium is awarded were removed from view—burnt up or destroyed—how much would our fairs suffer? Very often, the loss would scarcely be noticed. There would be still, in almost every such collection, a good show left; and a show of as good things, or very nearly as good—so good that the two rivals must lie side by side ere the superiority of either can be appreciated. We ask again, then, for whose benefit are fairs instituted?

2. Are they designed for the especial benefit of those who, in fact, exhibit? We admit that such do, very often, receive great benefit from fairs. It is the very best way, in many cases, of getting the attention of the public to the article in their possession. We recently invited one whom we found exhibit-

ing an ingenious invention to advertise in our journal. "No, sir," said he; "this is the only way we advertise." He was wrong. After seeing the thing on the grounds, under the excitement of the scene, and after looking at scores of other things equally new, and perhaps more curious, the mind of the spectator is bewildered, and while the exhibitor may think that all leave him sensibly impressed with the wonders of his invention, the fact is, the next machine they look at drives out all others, and this will presently be made to give place to another. But when they come to sit down coolly at home, and read a description of the same thing, and perhaps an editorial commendation, they are far more open to receive abiding impressions—far more so than if they had not made a personal examination at the fair.

While inventors and producers thus gain much by an exhibition of the articles they may have on sale, the *impression* is made on the mind of the spectator. The change is ONLY on him. The exhibitor is a gainer thereby, because his object is to impress the people with a conviction that he furnishes a better article than any other.

This is more completely and entirely the case in exhibitions of machinery or implements, but is essentially true of field-crops and animals. Why does A or B exhibit his basket of corn? To show that he has done better than others, has pursued methods and plans that were more successful; and to those who see that corn, the evidence of the senses outweighs all others. To those who do not see, the award of a premium is evidence, and this award is good for nothing else, except as it was required as a means of procuring that corn for the committee's tables. The offer of a premium, then, is only a means of securing, not so much better crops, but *the evidence* that better crops may be grown than are usually obtained; and that many, not one or two, but many, do, *in fact*, secure such crops, and find it to their advantage so to do.

If every body would raise crops as good as those which obtain the first premium, it *might* be that no premium would be expedient. No premium would be expedient unless something still better, not yet attained, was to be looked for.

We are brought back, therefore, to the fact that the ultimate aim of all shows is to effect, THROUGH THE SENSES, the mass of the people. We say through the senses, though not necessarily or exclusively *at the fair*. The fair is the first only of a series of more private exhibitions and conversations and discussions. If mere reading an account of such and such productions was all that is required, all fairs might be dispensed with. Then a few itinerant committees, appointed and paid by the State, might be the very best thing; and we shall, indeed, have something to say on that matter before we are through with this subject.

We come, then, to the inquiry, whether, *in itself considered*, it is best to tax this same public with such an assessment as will hinder them from seeing that show. The answer is perfectly obvious. Such a plan is suicidal and without excuse. Whether a demand of six, twelve, or twenty cents will have this effect, we do not now stop to inquire.

But money must be had, premiums must be paid, various expenses must be incurred, and the fair is indispensable to rapid improvement in agriculture. Men are *so free from selfishness*, that they will not look after their own interest, unless the effort is accompanied with some Dodworth's band—something, at least, to make some kind of a noise. Hence noise has become of very great consideration in civilized communities. It not only keeps Louis Napoleon on his throne, but is of very great importance in rearing calves

and raising potatoes. The only question is, What is the best method of making the noise, or who shall pay for the powder? Let us examine this question.

The first inquiry, as it occurs to us, is whether these institutions are among the "benevolent," so called, or the self or mutual-improving. We should place them among the latter, the mutual-improvement class, which, by the way, is a very numerous one. If we are right in this, our investigation will be very short. For among all these, it is proper and usual for them to pay in common their own expenses. A parish library is to be bought for the mutual benefit of all. Then the parish must pay for it, by tax or contribution. The former plan is always just, the latter sometimes expedient. A mutual insurance company is to be carried on. Who foots the bills? Each member, *pro rata*. Illustrations are needless, the theory is so plain. Those who choose to go into the enterprise must stand in their lot. But many will not do so. They "can't afford it." Then the ordinary modes of proceeding must be abandoned, and the *next best* means attempted, or the plan must be dropped. Voluntary subscription is next in order.

Now, why should A and B and C, each give more than his share? Because he has it to give, and *feels the importance of the subject*. At whose cost is the temperance reform sustained? At the cost of those who totally abstain, and who do not need the reform. Who sustain all the isms of the day? Those who are sufficiently persuaded of their importance to open their purse-strings in their behalf. The agricultural reform being one of this class, those who feel its importance, and they alone, can be relied upon to sustain it. But suppose this reliance fails you, what then? Take the *third* best means? It may be so, or it may not be so. Perhaps it would be better to wait awhile, and bring up the people to a better state of feeling on the subject. But the trouble then would be, that the fair is one of the most efficient means for giving vitality and power to the truth on this very subject. This fact, then, should be allowed its proper influence on the minds of those who have hitherto refused to subscribe for this object.

We have been somewhat celebrated in our day for our advocacy of the doctrine of Protection to American Industry. Our views of principles have not changed *one iota*, though our hopes and expectations are essentially modified. But we venture here a

Novel Form of Industrial Protection.

If the State is benefited by the progress of American industry, as it surely is; if it is the State which is reformed in all such progress as that now soliciting our attention, as it certainly is, then the State is, in fact, the community which should tax itself, and the people have no cause of complaint for any such assessment. It is equally true that all outsiders have nothing to do with the thing; and if they "come in" at all, it must be on our own terms. Now, suppose we should agree that any may come in, provided a certain amount or per centage of the articles thus brought in and sold shall be put into our own treasury, to form a Fund to be expended for our own improvement, to enable us to produce the very best specimens of the article in question in the very best manner. It is unquestionably better that each unit, whether individual or social, should be independent of all others, so far, at least, as these necessary products of labor are concerned. It is desirable that no "neighbor" should be obliged to ask favors of another, to enable him to carry on successfully his own legitimate, regular, and desirable and even indis-

pensable calling, whether this necessity involve one or one hundred items. This seems clear.

These outsiders would like to sell us lots of linen goods, iron in various forms, etc., etc. We have agreed to suffer them to do so at certain rates. Now, let the *committee of arrangements* at Washington, who say that things must remain as they are, so arrange the matter that all or a certain share of the profits of these sales of the property of outsiders, shall be given to our State societies, (there, perhaps, to be further subdivided,) to be expended in instructing us how to produce the highest and best specimens of the same kind among ourselves. In other words, our Society will admit outsiders to sell on our own grounds and in our warehouses, provided they will pay us what we consider a fair price for this right, in competition with our own products. While we are unwilling to tax ourselves for self-improvement, this plan would work out magnificent results. Minute calculations and apportionments would be too tedious, of course; but we might make a general apportionment. The essential point of the thing is, that *the management* at Washington shall secure to the State societies, as trustees, an amount for agricultural and mechanical improvement at home, which shall be a fair equivalent for any loss by the competition of outsiders, which may be permitted on *our own soil*. If we shall prove ourselves incompetent to the work of producing the very best qualities, and in indefinite amounts, after a fair trial, then let all the gates of our inclosure be thrown down, and all our fairs, through all our States and territories, be turned into commons. Would not any farmer justly complain if he was obliged to furnish the necessary facilities in his own buildings, for a rival from a distance to sell the very same articles he produces, and in which competition is hazardous to himself?

But the form in which we have presented this may be thought "too political." In fact, we think it *entirely politic*, and we will be content if, in any form, our *political governments*—who do almost every thing because it is politic or policy, and not because it is just—will carry out a plan of this sort; and we do strenuously contend that our national and State governments ought to furnish liberal provision for expenditures of this description. It might reasonably be required, that all kinds of useful industry should be alike encouraged by premiums and otherwise; and then we can see no reason why the measure should be deemed undesirable or impracticable. All that is necessary is, that the farming and manufacturing industry of the country should demand this for themselves, and the thing is done. One million of dollars apportioned among the States, would give an average of more than $30,000 to each State, and even much more than this might be given. Our national treasury is running over, but no one dreams of distributing of its profusion among the farmers and mechanics, for the improvement of their several crafts, though these are the very men who sustain the institutions of the country.

We have said that premiums are or may be comparatively unimportant among the instrumentalities used for this object. Perhaps it would be better to say that they should be regarded chiefly as the indirect means of good, rather than as having any value of their own. Thus, when premiums and other means of power over men's curiosity, selfishness, love of gain, etc., have done their work, of securing the attention of the public in one or several places of convocation, then let us have the benefit of carefully-drawn statements of the processes adopted, all the circumstances involved, with the errors of previous years; the details of experiments, whether successful or unsuccessful; propositions for future experiments; suggestions in regard to new

machinery and new applications; specimens of very high styles of products of any kind, as of printing, weaving, paper-making, etc., etc. Thus all may be alike encouraged to emulate these higher specimens of skill, and a general attention, at the same time, be secured at these annual or semi-annual convocations, which might continue for several successive days. Were no other expenditures demanded in such cases, this amount of time and labor would be cheerfully given, and, no doubt, prove very profitable.

The actual view of fine products of the farm, or shop, or mill, we think, of vastly higher value than the most eloquent harangue on theories or on facts. The premium is only valuable as it leads to this other and greater good. Hence the influence of the latter should be as widely extended as possible. The boy, in his teens, may be essentially affected for a whole life as a farmer by such an exhibition. Many a fruit-grower or raiser of cattle would then be stimulated to adopt practices of vital importance in the improvement of our stock. Many a dairy-maid might there be inspired with a sort of *esprit de corps*, which would exert a controlling influence upon these products of the farm. This kind of training might awaken a *pride of production* in every department of farm work, which would deserve the name of revolution, when contrasted with the general indifference now prevalent among a large majority of our citizens.

We have often said that our farmers need not information half so much as means, to place them all among our men of progress. One form in which capital might be used to very great advantage, through the agency of agricultural societies, is by loaning money, with or without interest, for a term of two or three years, to enable farmers of small means to cultivate their lands. Increased products would furnish the means of repayment and leave them in possession of fertile acres in place of barren, worn-out wastes. The loan might be repaid by a certain amount of each year's crop, or by the excess of all over so much per acre, when expended under direction, and thus more be received than was given, while the farmer also has more, beside his improved lands. We are by no means sure that the money now paid as premiums, if laid out as interest for money hired, even from the banks, for such uses, would not accomplish more good than it does now. Certainly it is true that a capital of a hundred thousand dollars of State stocks, might be created, costing no man a farthing, but the whole manufactured out of a quire of paper, and at the only possible cost of the *State's name*. We can see no objection whatever to such an operation, to any reasonable amount. It is not fictitious issue for currency, but a State loan for a specific purpose. All that the State could be liable for could be most abundantly secured in various ways, so that no loss, in any event, would be anticipated. But on the other hand, a fund of actual value to an indefinite extent might, in due time, be acquired by the payments of instalments, from time to time, by those who have had the benefit of the loans. Then the whole operation would be, not more safe, but become a solid and substantial fund, the very erection of which has already renovated, perhaps half the farms of the State, and its future operations secure constant and important progress in every branch of home industry, whether on the farm or in the shop.

There is another form of service, which, we think, our agricultural societies might render at a trifling cost. When we had the honor of presiding over a school, we did much by honorary marks. Not only each boy might earn them, but a series of benches—that is, the occupants of them—was also entitled to them. Thus the more orderly, or more gentlemanly half, as the eastern and western, received, each week, some valued distinction. So our com-

mittees might do with towns or districts. Some men have a measure of town pride, who have no love of self-reform. They like to belong to a handsome company, military or any thing else; though they have no love for tactics or strict discipline. When the best town team is honored with a premium, as it is in many counties in Massachusetts, a farmer may buy a yoke of good oxen, from this sort of pride, when he would not do so from any love of good cattle. So the general condition of the several districts or towns in each and all the several points of good husbandry might, at least, be given in a carefully-drawn report, the facts being determined by actual observation. Thus we have work for a travelling committee, named in the former part of this paper, on whom also the weekly or monthly supervision of all farms entered for premium as the "best-managed farms" would naturally devolve. The same committee might also inspect, with little additional trouble, all experiments going on under the auspices of the society. In fact, the difficulty would consist in making the selection of those services which should seem most urgent, rather than in finding out how to occupy such a committee to advantage. This labor would now seem premature in some communities. When we have advanced far enough to employ such committees, many questions will naturally present themselves as to the duties to be required of them. It is only just, however, to suggest that several societies in New-England, and perhaps elsewhere, have had such committees for several years.

UNITED STATES AGRICULTURAL SOCIETY.

The Third Annual Meeting of the United States Agricultural Society will be held at Washington, D. C., on Wednesday, February 28, 1855. Business of importance will come before the meeting. A new election of officers is to be made, in which it is desirable that every State and territory should be represented. Lectures and interesting discussions are expected on subjects pertaining to the objects of the Association, by distinguished scientific and practical agriculturists. The various Agricultural Societies of the country are respectfully requested to send delegates to this meeting; and all gentlemen who are interested in the welfare of American agriculture, who would promote a more cordial spirit of intercourse between the different sections of our land, and who would elevate this most important pursuit to a position of greater usefulness and honor, are also invited to be present on this occasion.

W. S. King, *Secretary.* Marshall P. Wilder, *Pres't.*

REPORT OF ESSEX COUNTY (MASS.) AGRICULTURAL SOCIETY.

By the courtesy of Hon. J. W. Proctor, we have received a copy of the Transactions of the Essex County (Mass.) Agricultural Society. This county, the home of Pickering and his compeers, is not famous in its political renown alone; it raises men. And though not remarkable, generally, for the quality of its soil, it can show a list of farms, and farmers, and farm products, that would honor any county in New-England. But we took up our pen to commend and make extracts from some of these reports; and first from that on

SWINE.

"It may be, and may remain a general truth, that, in the language of the Chairman of the Hampshire County Committee of last year, 'No one breed is best adapted to all locations and circumstances.' It can hardly be credited, however, for a moment, that the answers to inquiries of the United States Commissioner of Patents, some two years ago, making a different and distinct breed necessary for almost every State, are to be taken as literally true. May it not be fairly questioned whether there are really as many distinct breeds of swine as there appear to be?

And might not a better knowledge of animal physiology aid us in accounting for the fact that different breeds of swine are so often recommended for the same or a neighboring locality? Or to be more explicit, has it not often been found true, that of the same litter of pigs some die and some live—and of those that live, a part shall do well and the rest shall not? And what butcher of swine is not familiar with the fact, that the *post mortem* examination often reveals the diseased liver, with its large or small ulcers, or worms in the intestines requiring a considerable part of the food taken by the animal for their support; or other diseased organs, not easily detected, even when the animal is slaughtered, and almost always unsuspected till then? In short, may not adventitious circumstances have often, most undeservedly, given complexion to our ideas of the value of our breeds of swine?"

"The following from the Agriculture of Massachusetts, for 1853, compiled by our indefatigable Secretary, Mr. Flint, page 364, will show how little reliance can be placed upon opinions often formed and expressed upon this subject. The question put to gentlemen in different parts of the country, contained in the United States Commissioner's circular, was, 'What is the best breed of hogs?' and says the writer, New-Hampshire answers 'The Suffolk;' Connecticut, 'A mixture of the old-fashioned hog with Berkshire and the China breed does very well;' New-York, by three of her citizens, separately, says, 'Berkshires and Leicesters;' New-Jersey answers, 'A cross with the Berkshire;' Pennsylvania says, 'A cross of the Berkshires and Chester County;' Virginia says, 'Irish Grazier and mixed Berkshire are our common stock;' Georgia answers, 'The best breeds for the climate are the Woburn and Grazier;' Mississippi says, 'The best hogs I have tried are the Berkshires;' Texas, 'Irish Grazier;' Tennessee says, 'The common old Grazier mixed with the Hindoo breed.' And without following the language too literally, it may be added, that while Kentucky is satisfied with the 'Woburn' only, her more voracious neighbor, Ohio, must have the 'Leicester,' 'Bedford,' 'Chinese,' and the 'Calcutta;' and while Missouri takes a cross of the 'black Berkshire' and the 'white Irish,' Florida says that 'for the range, or shift-for-yourself system, the long-nosed Pike stands A No. 1.'

And when it appears as it does from the same source, that a hundred pounds of corn yield in some cases 'but eight pounds of pork,' and in others 'forty pounds,' it would seem that there must be something more than the peculiarities of breed to be taken into the account in explaining these results. Not indeed, let it be distinctly understood, that the accidents of diseased organs, etc., referred to, would account for all this variety of opinion; and least of all would we intimate that gentlemen answer the Commissioner without suitable reflection. But great as is the confusion and apparent number of breeds, and the mixing up of breeds, there might be found to be less of both, we think, if the 'accidents' were fewer, or if we were better able to detect them.

It is a fair question, and an important one to begin with, What and how many breeds of hogs are there really distinct? Some are so, clearly—but the question is not easily determined, and no discussion of it is proposed in this report. The generally received opinion is, that the Suffolk is a distinct, original breed. Let it be so considered. Now, is it the best breed for general use in the county of Essex? *It is not*, even though it is true that the pork of this breed is much esteemed, and generally commands from one to two cents a pound extra in Boston market. The reason is obvious; they come to maturity at a very early age, and never, or rarely weigh more than 250 to 300 pounds. There is a real difficulty in keeping them from taking on fat, it is said, in order to their getting any considerable growth at all. Dr. J. Kittredge informed the Committee, while examining his pure Suffolk boars, that he could with difficulty keep them low enough in flesh to answer for breeders or to bring to the show. Their keeping had been one quart of meal a day, with the house slops, and raw apples, both sweet and sour; and upon this keeping they were fat, notwithstanding the large one had served for forty-two sows, and the small one for twenty to thirty, since last spring. It seems therefore now clear, that the Suffolks, being easy to fat, (indeed, being always fat, it is said, after being a month old,) are a suitable breed to cross with.

The only remaining difficulty is, to know and obtain the best breed for crossing with them. And first, it should not be the Chinese, because they incline to fatten too much on the belly and too little on the back, and besides, according to Youatt, they are too oily, and do not make good bacon. Neither should they cross with either the Berkshire or Byfield, because both are too small and snug-boned, to make a large hog. But probably, to put a case within the reach of all, almost any of the large kind, the 'old-fashioned kind,' would make a good crossing with the Suffolk."

"As the 'Agriculture of Massachusetts' by Mr. Flint, referred to in the early part of this Report, is not likely to be seen by all who may see our County Society's Transactions, it may not be amiss to draw upon the Report of the Norfolk County Society's Committee on Swine, for last year, in relation to one point. It is a report prepared with great care, and contains, moreover, a treatise upon swine, by Sanford Howard, of unusual value.

The point about to be mentioned, taken from the report, referred to, is discussed by another writer. This writer starts the idea, and refers to 'Giles, in Philosophical Transactions for 1821,' as an authority for the theory, *that the male, by whom the female is destined to receive her first progeny, stamps a character upon every subsequent produce, even by other males!* As no facts are cited in support of this theory, it will be doubted by many, of course. If, however, it should have the effect of inducing those having valuable sows, to be careful in selecting the boar to which the young sow shall go for the first time, the hint will not be lost. And to apply the rule in our county, it would seem a clear case, that, if those having large-framed sows of any breed, and living within a reasonable distance of a pure-blooded Suffolk, would take the pains to carry them to such boars, they would be well compensated by the extra price they would obtain for their pigs, or by the quantity and quality of the pork if they should keep them, or sell them at market."

Another admirable report, by Thos. E. Payson, Esq., deserves careful attention, especially from the farmers of New-England. We refer to that on

SHEEP.

In discussing the question whether sheep are profitable there, and what is the best breed of sheep, he proceeds as follows:

"But why speculate upon a matter which is capable of proof; and that, too, by the best evidence possible—the testimony of experience? This testimony is all one way, so far as the information of your committee extends, and that is, that sheep are very profitable animals in Essex county, to the general farmer. Not only has this been the case since the demand for lamb and mutton has increased—and the prices of wool have sometimes ranged high—but taking all things into the account, it has *always* been true. A member of our Board of Trustees, lately deceased, whose opinions always received, as they deserved, great consideration, and were seldom found to be wrong, used to say that a pasture which would carry twenty head of full-grown cattle, and for which that number was sufficient, would carry twenty sheep besides, without detriment to the cattle, and with positive benefit to the pasture. However this may be, it is conceded on all hands that a small flock of sheep are as profitable as any stock a farmer can keep. Admit this to be so, and it is easy to make them far more profitable.

We have had, heretofore, with very few exceptions, what are termed the old-fashioned breed of sheep, which is no breed at all, or rather a mongrel intermingling of several breeds; some with long wool, more with short wool, others between long and short—but all of them deficient in what is most and permanently profitable, to wit, weight of carcase. The raising of sheep for their *wool* mainly, or exclusively, must be left to districts of country where pasturage abounds, and which are remote from markets. With us the carcase is to be looked to, rather than the fleece. This deficiency of carcase can be entirely remedied with very little trouble or expense. Sheep of improved breeds—introduced from England by men of ample means and enlarged views, have become so numerous that any farmer can improve his flock almost without money—certainly at a very moderate price. The Leicesters and South-Downs, or grade animals largely impregnated with their respective blood, can be obtained anywhere—and any of them would give increased value to the progeny of our ordinary sheep. The Leicesters have long headed the list of English sheep, but recently either some of the less aristocratic families have stolen a march upon them or the taste of John Bull has changed; for the mutton of the black-faced breeds is worth in Smithfield market half pence per pound more than the Leicesters. We take it that the English are the best judges; and, following them, South-Downs are to be recommended as more valuable to us here than Leicesters. They certainly are to be so recommended, if the fashion of feeding or more properly *starving* sheep, hitherto often practised, is to be continued, for they have 'a patience of occasional short keep, and an endurance of hard stocking equal to any other sheep.'

But the *best* sheep, (in the opinion of those of your committee who have seen them,) which have yet been introduced to the United States, are those lately imported by Mr. Fay, of Lynn—a gentleman to whom our Society, for his pecuniary liberality, is under many obligations; for the benefit of his suggestions and examples far more. After very particular and extensive observation of different breeds and different flocks of the same breed, Mr. Fay selected these, as in his opinion, the best English sheep to send to his farm in Essex county, both for profit and improvement. These sheep have been by him named 'Oxfordshire Downs.' They are *cross-bred* between the Cotswold and pure South-Down, inheriting from the former a carcase exceeding in weight that of the South-Down from one fifth to one quarter—a fleece, the fibre of which is somewhat coarser and stronger, it is true—but weightier than the South-Down by one third to one half; from the latter, the rotund-

ity of form and fullness of muscle in the more valuable parts, with the brown face and legs, so that they may not be very inaptly termed, South-Downs, *enlarged and improved*. We should suppose that the live weight of either of Mr. Fay's imported bucks would exceed two hundred pounds. The ewes are larger than pure South-Down ewes, in like proportion. We recommend to those farmers of the county who are interested in sheep-breeding, to look at these sheep. The sight will well repay the expense of a visit from any part of the Commonwealth.

With these various and abundant materials for improvement within our reach, and with the certainty that the raising of sheep, even unimproved, is profitable, we must be blind to our interests not to take advantage of the opportunities within our reach. Hundreds of acres of pasture-land in the county, partially worn out, and full of shrubs which the cattle reject, may be improved by stocking with sheep. At the same time the animals themselves will probably pay a better profit than any other farm stock."

"Every farm is not adapted to sheep-breeding. Those best adapted to the purpose are where there is an extent of elevated pasture, such as we see in all parts of the county, being over-run with moss and worthless bushes. The improvement of such would add much to the agricultural value of the county. In the opinion of your committee, the stocking of sheep would bring about this result.

In short, your committee recommend to every farmer, whose land is adapted to them, to make trial of a few sheep. Give them a fair chance in summer—bestow upon them *moderate* care at all seasons—but at yeaning time give them your undivided attention—feed well afterwards, particularly if the lambs are dropped early in the year, and we think they will amply repay the pains and expense which may be bestowed upon them."

GRAPES.

We learn from the report on this subject, that Mr. Blood, of Newburyport, presented grapes for premium, which were produced from the seeds of Malaga raisins. They are cultivated in the open air, and ripen by the last of August. The vines have been in bearing nine years, and have never failed to produce a good crop in the natural soil, without any nursing, such as bone-manures, guano, etc. Slips from them have proved as productive in Vermont and New-Hampshire, and ripen as early as in Essex county. The committee say that the fruit was "juicy, sweet, and pleasant, but lacked sprightliness and flavor." But they do not consider the fruit so "superior" to others as to deserve a premium under the rules of the Society.

Other reports will receive attention in another issue, our space being limited. One on Poultry, by H. K. Oliver, Esq., is wonderfully full of classic quotations from English and Latin poetry, the former ranging from Mother Goose's Melodies to Milton, and all alike overflowing with fun and wit. No man but a good scholar could write it, and no man who is injured by a real abdominal laugh should dare to read it. We commend it to all who are dyspeptic. But let no devoted lover of Shanghais read it. He would at once call "coffee and pistols for two."

A Report on Farm Implements, by J. W. Proctor, Esq., urges the importance of what we have so strenuously advocated—the more liberal use of implements on the farm. We wish our excellent friend would give us his views more in detail in these pages, and in a practical form. Will he please consider himself notified accordingly?

BUILDING MATERIALS.

CAEN STONE.—We present, in this number, but a single one of the important building stones not already described, and that a new stone in this country, and not very well understood. It is from Caen, in Normandy, and is extensively used across the Atlantic. Its more noticeable properties are as follows:

It is a species of yellow limestone, a mingling of yellow or cream color and white. It yields with great facility to the mallet and chisel; and when the surface is fresh, it may even be cut with a knife. As it is longer exposed to the air, it becomes harder. From its appearance, there might be some doubt as to its durability. Its grain is less compact than our marbles; and if it should be found so porous as to absorb moisture too freely, it might receive damage from our severe frosts. Still we have, at least, the experience of the present winter, and find, as yet, no such result. The Nassau Bank, the whole surface of which is of this stone, exhibits no sign of disintegration that we can discover. Several buildings in this city, recently erected, are constructed with this material. Some dwelling-houses in Ninth street and in Sixteenth street, have fronts of the Caen stone. A new building on the Fifth avenue, opposite Madison Square, is now going up, of the same material. The Unitarian church, still unfinished, corner of Fourth avenue and Twentieth street, partly of this material, is of peculiar construction. The outer surface on all sides consists of alternate layers of Caen stone, yellow of course, and of brick, of the usual red. What the origin of this idea is, we can not say. The stripes of the zebra, etc., run the other way, or perpendicularly, while these are horizontal. Some caviller has uncourteously hinted at a barber's pole. It is an immediate copy, we understand, of "an elegant church on the Continent;" and this, to many minds, is explanation and recommendation quite sufficient. But we purpose simply to describe, without any attempt at defense. These Caen stones are some twelve inches deep, and these are succeeded by an equal height of bricks; and thus these two, the bricks and the stone, alternate from foundation to the coving. The entire style of architecture of this church is novel in this country, and will deserve special mention, no doubt, when it is completed. But our present business only relates to the material employed.

In the new Trinity Chapel, which, by the way, is a very large church, yet unfinished, near Fifth Avenue, and on Twenty-fifth street, we believe, the Caen stone is used for the interior lining. We should think it admirably adapted for this purpose. It is light and pleasant to the eye, which can not be said of the brown sandstone so much in use both for exterior and interior walls, and it is also comparatively cheap. It is brought here as ballast, at a trifling expense, and being very easily worked, it may be made to present any shapes that the fancy of the architect may prefer, whether in the forms of mouldings or more labored and more fanciful chisellings.

MICROSCOPIC PLANTS.—It is stated that a French gardener has reversed the order of things, and instead of producing colossal vegetables, has succeeded in growing microscopic specimens, which are said to contain as much of the nutritious principle as vegetables several times their size.

TURPENTINE CONVENTION.

A CONVENTION of gentlemen interested in the production of turpentine has recently been held in Mobile, Ala. Col. J. S. Deas was President, and A. C. Blount, Esq., Secretary. Able committees were appointed on different branches of the subject. Col. R. D. James presented the following as to the

BEST MODE OF MAKING AND PREPARING TURPENTINE.

The committee to whom was referred the resolution of Col. James, upon the subject of the cultivation of turpentine, etc., beg leave to make the following report: That the character of the soil best adapted to the production of the turpentine pine should be of light and porous nature, with a subsoil of clay, capable of retaining moisture. The pine should be of an extended low-growing top, with thick bark and sap-wood—the trees not to stand so thickly upon the land as to be too much shaded by the overgrowing foliage. The number of boxes to be cut in a tree should be governed by the size of the same. As a general rule for cutting boxes, the committee recommend the following standard: the box to be thirteen inches in horizontal width, three and a half inches in horizontal depth, and seven inches in perpendicular depth; this will produce a box of the capacity of one and a quarter quarts, which, after a few years' use, will be reduced to a box capable of containing a full quart only; which, from experience, your committee believe to be the most profitable size. Taking a tree capable of sustaining two boxes, they would recommend that the boxes be cut side by side, with a life-streak of bark of four inches intervening between them, in preference to cutting them opposite to each other, and that one third or more of the bark should be left for the support of the tree, the boxes to be cut just at the bulge of the tree near the root of the same. The corners of the boxes should be cut out with the inclination of the face of the box, and to extend in a line perpendicular to the outer corners of the same, so as to show a line horizontal and the top of the box—the object of *chipping* being to expose a new surface of the pores for the exudation of the turpentine. The cut of the hacker should extend a half inch in depth into the tree, and one fourth in altitude, and the chipping should be renewed once a week. The best instrument for the purpose is the hacker with a small bowl, to be kept exceedingly sharp, and the best instrument for sharpening the same is the stone known as the Siam hone or slip. Your committee have nothing new to suggest or recommend as to the best mode of dipping, or the best instrument for that purpose; but, in reference to the scrape or hard turpentine, they would advise the use of cloths instead of the old-fashioned box for receiving the same. The committee would recommend the light iron axle two-horse wagon, as the most expeditious and economical for hauling turpentine. The frame for the barrels should be made of 4 × 6-inch scantling, with segments of circles cut therein, one half across the upper face of the same to receive the ends of the barrels, with two interior parallel rails, so that when either end of a barrel is removed from the concave which it occupies, it can be rolled from the wagon on a smooth surface. The committee would recommend that when the distiller can avail himself of a hill-side, the simplest plan to elevate turpentine to the still, is to extend a railway from the top of the hill to the platform. If upon a level plain, the use of the machine employed by flour-mills to elevate their sacks and barrels to the upper stories of the mill, the said machine being a platform, with four upright posts, with a roller in the head of each, two ropes

from the roof of the still-house, passing beneath said rollers, (one on each side,) thence through sheave-blocks and around a cylinder, turned by a crank from below. In regard to preparing the turpentine for distillation, we refer you to the explanation made by a member of this committee, as to the style best adapted to making the best article of rosin. The experience of your committee would lead them to decide in favor of a small-size still, or with a flat and greatly extended surface. The committee would recommend that, in distilling, the still should be charged to only two thirds its capacity, to allow for the expansion of the material during ebullition. The amount of water to be supplied should be equivalent to the amount condensed in the still-worm, and kept in the same ratio so long as the spirit comes over; and should the still have a tendency to boil over, an increased amount of fuel is to be supplied until the excessive ebullition ceases; the heat is then to be diminished, and the still run regularly as before. Your committee deem it unnecessary to enlarge on this point, as they presume that in all cases of new beginners, a practical distiller will be employed. Your committee recommend that in addition to the usual mode of glueing the spirit-casks, that the casks being partially drained after each glueing, be placed upon a horizontal plane, each head alternately placed upon said plane, and would further recommend the use of the Scotch glue, in all cases in which the distiller is unable to manufacture his own glue from good sound hides. The committee would recommend that, in making barrels and casks, the staves and heading should be fully dressed, ready for the truss-hoop, and be permitted to remain some time, previous to being made into barrels, for the purpose of allowing the staves, etc., to shrink. By adopting this course, the barrels are less liable to leakage. The staves for turpentine barrels should be thirty-two inches in length, the head to be worked in a twenty-inch truss-hoop. The spirit-cask should contain forty-five gallons, and in case oak heading can not be obtained, we would recommend the substitution of poplar instead.

From statements made during the discussions of the Convention, it appears that more than a million of acres of land are in partial cultivation in turpentine, and that from the commencement, this business has more than doubled itself annually.

The average product of a laborer is said to be much greater than in the culture of cotton. The following statement was embodied in one of the reports:

The average product of the laborers in making cotton may be said to be at a maximum of four bales; upon which the receivers in Mobile would realize $10. The same laborers engaged in turpentine will produce 170 barrels of rosin and 30 casks of spirits, the handling of which in the city will produce, under the various charges of wharfage, drayage, storage, insurance, cooperage, and commissions, $87.50—$45 on the spirits, and $42.50 on the rosin. And we would further suggest that the laborer in turpentine will consume of the merchandise of Mobile to an amount equivalent to five hands engaged in cotton, from the fact that his occupation precludes the possibility of his producing any of the necessaries of life. The amount used in painting the four millions of dwelling-houses in the United States, or the exceeding great amount of this, together with other naval stores, used in painting and preserving our vast shipping and steamboat marine, your committee have no means of correctly stating. The amount of spirits used in the printing business (there being 2800 presses in this country at a pint per day each) at a low estimate is 2600 casks, containing 112,000 gallons. The manufacture of

India-rubber (but yet in its infancy) consumes 4650 casks, containing 187,000 gallons; this business, it is estimated by those conversant with the subject, will, in the course of five years, increase to the amount of $15,000,000; in importation of the raw material of caoutchouc, reaching now the sum of $5,000,000. The extent of its use in gas, camphene, burning-fluid, and for chemical and medical purposes in this country, and the exact amount exported for foreign consumption in these and various other branches of manufacture, your committee have no correct data upon which to base an estimate. Your committee are advised and are aware that an immense amount of rosin is used in the manufacture of rosin oil, the amount of 36,000 barrels being converted into this article in one factory alone in the city of New-York. A similar amount, nearly (say 24,000 barrels) being converted into this oil in the State of North-Carolina, besides a large amount at Norfolk and various other factories in the United States; the exact quantity used by these is not definitely known. The consumption of rosin in the lighting of cities and private residences, also affords an outlet for a very considerable amount; the Capitol of the United States, and some of our best hotels, being lighted exclusively with gas made from it. The extent of the soap-making business in which rosin enters in the ratio of about fifty per cent, is an interest of no insignificant magnitude, and is a source of the greatest consumption, and yet the largest portion of this article consumed seems, from the shipments abroad, to enter into the manufactures of foreign countries. And, in conclusion, we would remark that under no circumstances can the price of spirits fall below thirty cents per gallon; for in that event it will be used to an unlimited extent in the production of gas; and it is produced in no other country to any great extent, except the United States.

WESTERN RAILROADS.

The following continuous routes are in progress, and are regarded as certain of an early completion:

Memphis to Hopkinsville, - - - - -	203	miles.
Hopkinsville to Henderson, - - - - - -	72	"
Henderson to Evansville, - - - - -	12	"
Evansville to the Ohio & Mississippi road, - -	55	"
Point of junction to Cincinnati, - - - -	155	"
Total—Memphis to Cincinnati, - - -	497	

On this subject, the *Louisville Journal* says: "The most rapid communication we now have with the South and South-west is by steamboats, which, on an average, occupy three days in a run from Memphis to Louisville. When the line of road I have described shall have been completed, a speed of but twenty-five miles per hour will make the travelling time from Memphis to Cincinnati, twenty hours.

Thus the opportunity will be presented at Memphis, to business men wishing to make purchases in Louisville or Cincinnati, to reach the latter city by railroad in twenty hours, remain there thirty-two hours, and return to Memphis—all during the three days that would be necessary simply to convey

them by steamboat to Louisville. If we will contribute our aid toward the construction of a hundred and sixty-nine miles of railroad on the air-line route to Memphis, we can save our city in spite of all competitors. Such an improvement will place us within fourteen hours' run of Memphis, and will even fix for ever, as the shortest route from that city to Cincinnati, the one through our own borders."

A STAGE ROUTE TO CALIFORNIA.

Gentlemen of St. Louis and elsewhere are endeavoring to establish a daily or weekly line of stages between Missouri and California. They wish to organize a company, with capital to sustain the line a year. The means being made sure of, the Company would obtain a force of men, stages, and horses, adopt a line across the plains and through the mountains, and locate stations fifteen, twenty, or thirty miles apart, as the character of the country might admit, and improve the same by permanent tenements, stables, and inclosures, with men at each station to guard the property and take care of the stock, and sufficient horses or mules for changes and relays. Ten through-passengers daily, at $100 each, would produce $730,000. The way-business would add to this, according to the statement of Mr. Mitchell, and an immense amount of gold would pass over the line at a heavy freight. The mails, they say, could be carried in twelve days from Kansas to Sacramento, and of course the line would be employed to carry the mails. These views were detailed with minuteness. F. P. Blair followed in a clear and convincing review of the great merits of the enterprise. Col. Mitchell, an experienced "mountain man," approved of the project, and said that his experience satisfied him that the stage in the mountains would not more materially be obstructed by snows in winter than the stage lines in New-York and Massachusetts. Col. Campbell confirmed this statement. He had spent three winters near the mouth of the Yellow Stone, and there was no snow to hinder any kind of travel. Col. Campbell said that the grass of the mountains did not rot in the fall, but dried and became hay, and could be used by stock. K. M'Kenzie, another "mountain man," confirmed these statements.

Mr. Holiday, of California, who had driven stock over the route, believed in the entire practicability of the project, and said the "Californians would meet Missouri half-way." Finally, resolutions were adopted for making application to the Legislature for charter for this great project; and we are encouraged to believe, says the *Illinois Weekly Journal*, which gives this account, that those persons have taken hold of the measure who will be likely to carry it through.

Royal Danish Railway—The important section of this railway, connecting the Baltic and the North Sea, has been announced. The entire line, including the Rendsburg Branch, forming the junction with the Kiel, Altona, and other lines, will be open early this month, and the undertaking will thus be finished before the stipulated period. Messrs. Peto, Brassey, and Betts, the contractors, have obtained a lease of the line for fourteen years, at a minimum dividend of six per cent on the capital, £540,000, with an equal division of all surplus profits. The Company, however, has power to put an end to the agreement in five or ten years.

BALTIMORE AND OHIO RAILROAD.

This Road is a great work. Its importance as a means of travel between New-York and Cincinnati, and other points at the West and South-West, is beginning to be appreciated, especially since the opening of the Ohio Central Road.

At an election for President, held in December, Wm. G. Harrison, Esq., who has so long and so satisfactorily served the Company in that capacity, was reëlected over two powerful competitors for the office.

We append a few statistical tables, and some other items of information gleaned from the Report just published, prepared by John H. Done, Esq., the acting Superintendent of the road.

REVENUE FOR NOVEMBER.

The revenue for the month of November has been as follows:

	Main stem.	Wash. Br.	Totals.
For passengers, . .	$52,600 75	$23,657 82	$76,258 57
For freight, . . .	264,170 11	7,443 59	271,613 70
	$316,770 86	$31,101 41	$347,872 27

There was an increase of nearly $9000 for passengers on the Main Stem, as compared with November of last year, which shows the advantage already resulting to the road from the opening of the Ohio Central Railroad.

A summary of the receipts of both the Main Stem and the Washington Branch roads during the fiscal year ending on the 30th of September, 1854, presents the following:

	From Passengers.	From Tonnage.	Total.
Main Stem, . .	$569,091 51	$3,076,517 92	$3,645,609 43
Washington Branch,	278,302 11	94,927 50	369,229 61
	$846,393 62	$3,167,445 42	$4,014,839 04

PASSENGER BUSINESS.

Mr Done, in alluding to the foregoing statement, calls attention to the fact that "of the entire revenue for the year—amounting to $3,645,609.43, only $569,091.51, or 15.6 per cent, has been derived from passengers—a result so different from the expectations which were formed before the opening of the road, as to surprise even the best-informed upon the subject."

The continued and unprecedented low water in the Ohio, has rendered the magnificent line of steamers constructed by the enterprise of the citizens of Wheeling, of little or no avail, as to the increase of the number of passengers, they having been able to run but a few months continuously since the opening of the road to the Ohio.

The condition of the Ohio River at various periods, very seriously affects the revenue of the road, as regards both freight and passengers. The navigation is obstructed by ice or low water for more than one half of the year. The report indulges in some just remarks as to future prospects from the opening of the Ohio Central Road, and also the Cleveland & Pittsburgh Road from Wellsville to Wheeling.

OF THE TRADE IN LIVE STOCK.

This important branch of trade has been quite active, and appears to be steadily on the increase, especially from Moundsville, Cameron, and other stations on the western division of the Road. The following statement will

show the extent of this trade, giving the quantities of each description of stock transported during the year ending the 30th of September, 1854:

119,699	Hogs,	Weighing	10,201.1.3.5
31,631	Sheep,	"	1,800,10.0.0
3,522	Horses and Mules,	"	1,762.0.0.0
10,017	Horned Cattle,	"	5,013.0.0.15
164,869		Tons,	18,776,11.3.20

OF THE FLOUR TRADE.

The great importance of the Baltimore & Ohio Railroad is seen in the following table, which shows the amount of flour brought to Baltimore during the year, with the number of barrels from the principal points of shipment:

Months	Wheeling.	Moundsville.	Cumberland.	Martinsburg.	Harper's Ferry.	Frederick.
October,	10,440	1,812	95	4,128	28,905	5,902
November,	23,592	570	577	3,614	28,288	10,765
December,	28,559	6,815	852	2,847	26,185	8,284
January,	20,746	358	1,319	3,274	21,197	12,602
February,	35,680	1,501	2,377	2,379	21,951	12,080
March,	12,352	1,680	503	1,777	20,498	10,106
April,	12,266	601	110	2,391	13,798	4,746
May,	8,267	90	..	546	10,680	2,945
June,	11,369	.	..	437	9,285	2,518
July,	4,341	.	..	1,290	4,699	1,804
August,	1,060	203	..	3,090½	22,964	3,609
September,	1,435	2,257	..	2,633	21,556	4,460
Total,	170,147	15,887	5,833	27,406½	229,966	79,921
Total from the above points,					529,160½	bbls.
" " all other points on the Main Stem					180,334½	"
					709,495	"
From the Washington Branch Road,					42,754	"
Total number,					752,249	"

FREIGHT FROM WHEELING.

The whole report of Mr. Done abounds in important and well-arranged statistical statements, the latter of which we regret are too voluminous for our limits. There is one statement, however, showing the description and amount of commodities transported from Wheeling to Baltimore from the 1st of March to the 30th of September, 1853, and from the 1st of October 1853, to the 30th of September, 1854, a period of nineteen months, which we condense, showing the following results:

Flour, barrels,	202,545	Cotton, bales,	3,612
Grain, bags,	15,735	Hemp, bales,	18,686
Seed, barrels,	6,849	Wool, bales,	6,086
Butter, barrels,	1,986	Tallow, barrels,	2,286
" kegs,	5,099	Feathers, bags,	4,393
Lard, tierces,	11,530	Tobacco, hhds,	22,754
" barrels,	37,801	Hides,	10,843
" kegs,	43,317	Leather, rolls,	9,527
Oil, barrels,	11,125	Soap and Candles, boxes,	11,883
Pork, barrels,	58,621	Cheese, boxes,	5,264
Bacon, casks,	39,030	Apples, barrels,	7,825
" boxes,	28,935	Dried Fruit, bags,	9,192
Hams, tierces,	19,693	Horses,	510
Beef, barrels,	7,000	Miscellaneous packages,	64,920
Whiskey, barrels,	26,536		

The total number of pounds, in all the above articles from Wheeling alone, is stated at 222,763,675.

This table is interesting as showing "the amount and description of the Western produce which has passed over the road from Wheeling to Baltimore, since the commencement of through-transportation, say 1st March, 1853. It is interesting as showing the character of the trade, as well as its amount and value to the city of Baltimore. Its irregularity also, comparing one month with another, illustrates fully the disadvantage we have labored under from the fluctuations in the river, and the frequent and long interruptions of navigation."

THE COAL TRADE.

The following statement will show the quantities of Coal transported during the year ending 30th September, 1854, from Cumberland, Piedmont, and Fairmont, the three points at which this trade originates, and showing the respective quantities delivered at Locust Point, in the city, and at way-stations:

Point of departure.	Delivered at Locust Point.	Delivered in the city.	Delivered at Way-Stations.	For Company's Use.	Total from each Region.
Cumberland,	274.273 06	24,134 18	5,262 08	9,112 17	312,783 09
Piedmont,	99,903 02	14,539 01	13,176 10	46,614 12	174,224 05
Fairmont,	21,149 17	10,825 16	157 05	5,294 13	37,437 11
Total,	395.326 05	49,490 15	18,606 03	61,022 02	524,445 05

The statement shows the quantity which paid freight to have been . 463,423 tons.
During the previous year the amount was . . . . . 308,890 "

Increase, ... 154,533 "
or 50 per cent.

The revenue from coal during the year amounts to $1,134,628.46. The coal trade was almost entirely confined to nine months of the fiscal year.

During the months of *January, February, and March, the operations of nearly all the mines were stopped*, by reason of a strike of the miners; and whilst it continued there was *almost a total suspension of the trade.* Had this not been the case, the amount transported during the year would probably have reached 550,000 tons.

The demands of the trade at the present time are very urgent; almost every operator in the coal region is pressing for larger accommodations, and new and important mines are about commencing business, with the capacity to mine and send down large quantities of coal. Full employment could be found for at least 50 per cent more machinery in that trade than is now or can be, with the present equipment of the road, appropriated to it. From these facts it will be seen that the advance in freight of 50 cents per ton from Cumberland, and 56 cents from Piedmont, made on the 1st November, 1853, has not operated to check or limit the business.

The road department of the Baltimore & Ohio Railroad Company, is not less worthily administered than is its transportation affairs. This branch of the service though less before the public eye, from the nature of its operations, is of vital concern. The skill, experience, energy, and sound judgment of its head, Wendel Bollman, the inventor of the much approved Railroad bridge, insure the best results to the Company. His annual report, containing much valuable information, is also just published, and may be found in the pamphlet containing the report of the President of the Road, and heads of its several departments.

During the past year twenty-one miles of the second track have been added, and various new sidings put in. Fifty miles of old string-timber track have been removed from the east end of the line, and substituted by new and heavy T rail on cross-ties. Several new bridges, depot buildings, etc., etc., have also been added.

Dr. T. C. Atkinson and Mr. John L. Wilson, are Mr. Bollman's efficient chief assistants.

The machinery department is of deep importance also to the successful working of a great road like this, and, upon its careful and energetic administration much depends. The report of Mr. S. J. Hayes, the worthy master of machinery, shows that the Company owns 208 locomotives, of all kinds, which are mostly in a good state of repair. A number of superior ten-wheeled monster engines have been built by the Company during the last two years, after patterns furnished by Mr. Hayes, and are working most satisfactorily on the Mountain Division, between Piedmont and Newburg. A number of old locomotives have been rebuilt in the same time for passenger uses, and every thing seems to evidence a judicious supervision. Mr. Hayes is said to have arisen from an humble apprentice in the Company's shops, to its chief machinist, and as such is now in command of some twelve or fifteen hundred workmen in various capacities. Mr. D. P. Rennie is the Company's assistant master of machinery.

This subject is one of general interest, affecting almost every locality in the Union. No one can glance at the tables presented by Mr. Done in his able report, and not feel that in the agricultural products and the coal, passing over this great road, every consumer of these articles is deeply interested. Baltimore must soon become one of the largest coal marts in the country, from the transportation facilities afforded by this road. The ready means for shipment at that point are quite equal to those of Philadelphia, and can not fail to be of much importance in keeping the country at large supplied with this necessary article of fuel.

It has been our pleasure to pass over this road several times during the past year. We shall only reiterate what is the testimony of every one at all informed on the subject, when we say that every thing connected with the road is under the very best management. Two passenger-trains are now running daily between Baltimore and Wheeling, passing over the whole distance, 380 miles, in a little more than sixteen hours. The opening of the Ohio Central Road furnishes a complete line to Cincinnati and points further west, and is fast commanding a heavy travel. We take pleasure in commending this route to the travelling public, as one in which speed, comfort, and romantic scenery are combined in a remarkable degree. It must become at no distant day *the* route to Cincinnati and the great West.

Glue for Plants.—Here is a fact for our horticultural readers. It has been discovered in France, that, for the generality of flowers, and more especially for pelargoniums, and the most delicate specimens of the lily tribe, common glue, diluted with a sufficient portion of water, forms a richer manure than guano, or any other yet discovered; plants placed in sand, or the worst soils, displaying more beauty and vigor, when watered with this composition, than those grown in the richest mould, and only sprinkled with water.

REPEAL OF THE DUTY ON COAL.

THIS is truly a progressive age, but the progress is not all in one way. We deny to-day what we urge as indispensable to-morrow, and the next day's belief will depend upon circumstances. We are by no means disposed to deny the sincerity of those who DARE to revise their opinions; but we do wish sometimes that men would be sure that what they advocate is the clear voice of reason, and not the dictate of prejudice or of social instincts merely, and then a change of circumstances might not overturn all their theories. It used to be called a sound doctrine with those with whom we were associated, that those measures were alone safe and reliable, which made us independent of the aid of others. This, to us, has always seemed reasonable. It never occurred to us that time and effort, even a considerable outlay reckoned in dollars and cents, expended in teaching a child to walk, was an absolute loss, not even if those engaged in *various pursuits* were called upon for their proportional contributions in this behalf. And what if the pupil became refractory, and kicked his patient and *benevolent* instructors? Why, he must be punished, but not by being suffered to grow up unable to help himself. Others are nearly as much interested as he in his acquiring this art.

Now, you may call this refractory child what you please, Carlos or Carbon; names are nothing. We would have all our juveniles fully instructed and confirmed in this indispensable tuition. But what do we mean by this figurative allusion?

Immense quantities of ink have been expended in urging the necessity of fostering our native productions, that is, of teaching our juveniles to go alone. And we have thought, *on all hands*, that among all our possibilities the coal interest was one of the most valuable. The successful operation of this reaches all classes and conditions among the people. The rich and the poor are affected alike, and no one of any craft or trade or pursuit has not in it a direct personal interest.

But the question is gravely agitated whether it is not best to allow the importation of coal, duty free. We are not surprised that this project should find advocates in certain quarters, but we are surprised at finding certain advocates on that side of the question.

The project may succeed. The duties may be repealed. If so, what will be the consequence? We hazard little in uttering the words of prophecy. We shall witness, in substance, the following state of things.

The first result is, a large importation of foreign coal, with constantly descending prices. Very soon, one after another of our own mining companies will be obliged to abandon their work. The entire supply falls then, essentially, into the hands of foreigners of large capital, able to endure temporary losses. Then the price will rise. Coals will be higher than we have known for years. But if our own mining companies shall venture to reöpen their abandoned shafts, these foreign capitalists will again fall in their prices and ruin those who engage in the enterprise. This is just what has been done, over and over again, within the memory of many not among the oldest inhabitants.

What is required by any enterprise which demands such immense outlays in advance, ere they can secure the confidence of the money market? Not immense profits. Our cotton manufacturers taught us this, years ago. Their large profits were almost their ruin. No, not *their* ruin, but the ruin of scores who engaged in that business, and who, in the rush of competition,

were victims of extravagant promises. What is required, and what is surest, safest, and, on all hands, most desirable, is, moderate but certain profit; a market that can be measured, and valued, and relied upon beforehand, a market that is essentially controlled by a regular, healthful, and comparatively constant demand. Fancy stocks, rising and falling with the success or failure of a few stock-jobbers, who create, or who fail to do so, a fictitious value to-day that will be essentially changed to-morrow, this will never establish an enterprise of this description. Read the brief history of the Pennsylvania iron furnaces, and the importance of a steady, sound, healthful condition of the market is perfectly obvious.

Our coal mines have not yet paid high dividends. The older and better established, if convenient to market, have promised well. They are and have been doing well. With increased facilities of transportation, many others will do well, and those facilities are constantly increasing. Some of those recently commenced are in a very favorable condition. Let the duty on coal be repealed, and many of these companies will be "repealed," too. They may bear a moderate and gradual reduction in the price of coal, even from the last year's prices, when they are fairly under way, with cheap conveyances to seaboard, but they must understand the market. They must know what they can reasonably anticipate, and then make their arrangements accordingly.

"But they have conspired together to raise the price of coal, and the people suffer severely." Well, so have flour-dealers; what will you do with them? So have drovers. What will you do with them? So have three fourths, and almost four fourths of all our craftsmen, and men of all avocations, from money-lenders to hotel-keepers. What is the penalty? "But they were obliged to do so." Is this excuse satisfactory? If so, before you condemn colliers, see whether they were not in the same category.

But this is all volunteer defense. The *fact* is denied by the parties concerned, and the fault is thrown back upon the operatives, who struck for higher wages. It is a hard lesson to learn, to bear unusual prosperity. How often have we seen very marked success in business turn a liberal man into a miser, at least so far as to lead him to *crave* more and more earnestly with every increase of the past and present.

If any craft, or any members of any craft, do conspire to over-reach or forestall the market, the law is open. The offense is indictable, and if the common law does not furnish the means for getting at some modern forms of this offense, call in the aid of legislatures. We can have it our own way. But let us not punish ourselves in trying to punish our oppressors.

How Much Lime do Soils Need?—Professor Emmons, in his Report on the Geological Survey of North-Carolina, says: "If we may appeal to observation and experiment, it is established that a small per centage of lime only is necessary to the highest degree of fertility; and yet this small per centage *is necessary*. If there is present one half of one per cent, it seems to be sufficient; for it is rare to find a larger quantity in productive soils." Prof. E. is a chemist and geologist of long experience, and was one of the first—perhaps the first—to ascertain that some of the most productive soils for wheat in Western New-York contain comparatively little lime.

BIOGRAPHY OF EMINENT MEN.

SOME months ago, we announced to our readers our intention to place upon our pages biographical notices of gentlemen eminent as agriculturists, or as mechanics, and this purpose we have delayed longer than we then intended. We begin the discharge of this assumed obligation in the following pages, being assisted in this service by an interesting portion of a sketch in the last number of *Hunt's Merchants' Magazine*, which is also accompanied with a well-executed portrait. Whether we regard Mr. Wilder's public position in agricultural, horticultural, and pomological societies, or his private character, and the general estimation in which he is held by a very large circle of friends, we certainly could not commence with a more suitable subject. We are therefore very happy to be able to commence our series with a sketch of the life of

Hon. Marshall Pinckney Wilder,

DORCHESTER, MASS.

Mr. Wilder was born in Rindge, a rough and rocky town in Cheshire Co., New-Hampshire. His father was Samuel L. Wilder, a highly respectable farmer and merchant of that place. His grandfather was a member of the Massachusetts Convention of 1787, which voted to adopt the Constitution of the United States. The family were held in very great respect, and filled many important offices. When nearly prepared for admission to college, the subject of our sketch was allowed to follow his own inclinations in a free choice between a learned profession, and the mercantile and agricultural duties of his father. He preferred the latter, and labored on his father's farm, and also assisted in his father's store, commencing as the youngest apprentice—a candidate for future promotion, as his abilities and opportunity might permit. Here he had a training which was of fundamental importance in preparing him for a constantly successful and healthful progress in after-years. At twenty-one years of age, he became a partner with his father. In 1825, he commenced business in Boston, in the firm of Wilder & Payson, and afterward was engaged as a partner in the firm of Wilder & Smith, and still later of Parker, Blanchard & Wilder, and Parker, Wilder & Parker, and now under the name of Parker, Wilder & Co., one of the most distinguished and extensive commission-houses in Boston, engaged exclusively in the sale of domestic manufactures, their goods being wrought in mills, of which they are either owners or agents.

It would be to us a very grateful task to follow Mr. Wilder into his own dwelling, surrounded by his affectionate, accomplished, and well-instructed children, where every thing betokens both refinement and efficiency, and presents a fine model for imitation. But, however pleasant this might be for us, it would require much space, and compel us to be more brief in that department in which our readers are more particularly interested. We therefore leave this track to our own delightful personal recollections, and to the grateful remembrances of all his acquaintances and occasional visitors. It is chiefly in the marvellous products of the earth, its flowers and its fruits, nurtured under his skillful supervision, that we are to present him to our readers. It is in connection with his gardens, his vines, his nurseries, and his orchards, that we must draw our picture.

It was in 1832 that Mr. W. established himself in his present residence, and here he has brought into being one of those little kingdoms of Flora, so

frequently occurring in the suburbs of Boston. In this department he is one of the most distinguished and successful. He was among the first who introduced the new camellias from Europe, and for some species he paid immense sums. Five or six guineas for each was the price of several, having only as many leaves. He entered upon the practice of hybridization of these splendid plants upon the principles laid down by Herbert, and has produced some very remarkable varieties. Among these may be named C. Wilderi, Mrs. Abby Wilder, Maria Louisa, Glory, and others. He now has in his possession the mother plant of C. Floyi, raised some thirty years ago, by Mr. Floy, of this city, and for which he paid the price of two hundred and fifty dollars.

But this is not especially his *forte*. Others, in that beautiful neighborhood, can, perhaps, make in this department as fine a display as he. Flora is not sole queen on that soil; POMONA has a still higher throne. And two such realms on the same territory, both triumphantly rejoicing in constant and successive victory, without defeat, it may be difficult to discover.

Pears are Mr. Wilder's hobby. He has been styled the PEAR KING. For many years, by importations and other means, he has secured whatever has been produced that was worth possessing. His collection embraces from six to eight hundred varieties. He has had on exhibition, at one time, *three hundred and sixty-seven* varieties of this fruit. Several of the most valuable now grown in this country, were imported by him. For this he had peculiar facilities, being in constant correspondence with the leading amateurs and nurserymen of Europe, who have orders to send him every thing new and desirable as soon as promulgated. He is also an honorary or corresponding member of the principal horticultural societies in Europe. Hence he has the means of obtaining the earliest information on this subject. He has recently been appointed Commissioner of the Belgian Royal Pomological Society for the United States. These facts show also the estimation in which he is held abroad. Indeed, his name is known in Europe almost as extensively as in this country.

This correspondence, to which we have alluded, and the copious notes, memoranda, etc., etc., naturally accumulating from his constant study and numerous experiments, and successful culture, have produced a mass of manuscript, from which he might prepare a work of great value on this subject, and we hope we may, ere long, be favored by its publication.

We have, more than once, heard farmers complain that they did not receive that degree of general respect which was their right. That they were passed by unnoticed, while professional men were placed in important, honorable, and lucrative posts. On this complaint the subject of this sketch is a complete commentary, and also a thorough refutation of it. For while Mr. W. is both merchant and farmer, it is not to his eminence in the mercantile line that he owes most of his reputation. Though he deservedly stands high in that capacity, there are scores about him whom he regards as his equals, accomplished, educated, efficient, all competitors for this same prize, and not a few of them are worthy rivals of the greatest and best. Of that class, in the city of Boston, it is emphatically true that "there are giants in the land." Nor is it, we admit, from the *mere fact* that he is a farmer, that he is honored, but because, when appearing as such, he exhibits the qualities and powers of a MAN—an educated, efficient, determined, upright, honorable, honest man. He has within him, and everywhere and always exhibits, the urbanity and kindness and liberality which adorn man. It was on the resolution hereafter cited, offered and passed unanimously at a magnificent pomological

levee, given by Mr. W. at the Revere House, that Mr. Lines, of Connecticut, said:

"It was due to the gentleman who has presided over the discussions of the Society with so much dignity and ability. He considered that the position in pomology which the president had reached, conferred more honor upon him than the Presidency of the United States could do. A gentleman who confers such immense benefits upon the whole country—he might say the world—as Hon. Mr. Wilder does, is entitled to distinguished honors. He hoped this resolution would be passed by a standing vote." Several other gentlemen offered remarks in the highest degree complimentary.

On the formation of the Norfolk County Agricultural Society, in 1849, we think, Mr. W. was chosen President, and, in the year following, gave the first annual address, full of valuable thoughts, on the subject of agricultural education. It was at the dinner, after the close of that address, that we enjoyed a greater intellectual treat than often falls to the lot of one in any country, or under any circumstances. We heard, at this one table, addresses from Mr. Wilder, who presided; Levi Lincoln, Horace Mann, George Briggs, Josiah Quincy, Josiah Quincy, Jr., Robert C. Winthrop, Edward Everett, and Daniel Webster! Mr. W. has been President of the Norfolk County Society for six years.

Nor does the preëminence freely acceded to Mr. Wilder result from the fact that he is in the midst of small men in the department of agricultural reform. It is precisely the reverse. Anywhere else, almost, many of his associates would be head and shoulders above all competitors. Among his near neighbors, and in the same small county of Norfolk, are Messrs. Samuel Walker, known and acknowledged as a host in himself, anywhere and everywhere; Benjamin V. French, the great APPLE KING, and one of the best and most intelligent farmers in the State; Thomas Motley, Jr., not more distinguished for his splendid cows and other imported animals, than for his equally splendid cultivation, and others deservedly distinguished; and these, with a more numerous list of associates, in different sections of the State, form a body of men, who, for personal worth and personal influence, are not exceeded by those of any other profession.

Let our farmers, as a body, be, and show themselves to be, men—yes, MEN—able to sustain the interests they represent, and then let them demand the *concurrence* of the State or national legislatures in those measures which are deemed of especial importance, and we shall no longer hear such moanings and lamentations from a forgotten or unthought-of and "dumb" portion of the community.

In 1851, on the formation of the Massachusetts Board of Agriculture, Mr. Wilder was elected its first presiding officer. At the formation of the United States Agricultural Society, at Washington, in 1852, Mr. Wilder was made President, and still holds that office. He also held, for eight years, the office of President of the Massachusetts Horticultural Society, and is still one of its directors. This Society holds weekly exhibitions of fruits and flowers, *the year round*, at Horticultural Hall, in School street, opposite the City Hall, and often collects a large concourse of people to admire the rich display. He is now President of the American Pomological Society. He has also held the office of President of the Massachusetts Senate, and has been a member of the Governor's Council. He has often presided over large deliberative assemblies, and always with remarkable success.* Who would

* We cut from a Boston paper the following paragraph:

"UNITED STATES SENATORSHIP.—We regret to learn that the Hon. Marshall P. Wilder, whose name has been prominently before the public for this office, desires not to be

not covet such distinctions rather than the noisy honors of a mere politician? The most popular achievements of the latter are often of little permanent value, sometimes positively harmful, and seldom last beyond a brief term. Such honors as we have depicted are incorporated in the very soil, bloom in the flowers, and bear fruit year by year. Even the child who enjoys these luxuries, which are often appropriated as a daily lunch, has occasion, day by day, to give honor to such men. They have their reward. They will not soon be forgotten. His virtues have a practical existence, benefiting and ennobling the whole community, and his name will fill a page in history that will suffer no detriment by the lapse of years, and which will have its interpreter on every hill-side, and in every valley where rural taste and refinement are found.

Perhaps we can not better occupy the space devoted to this subject, than by presenting the following extract from the well-written and truthful sketch referred to on a preceding page. After giving a very commendatory account of Mr. W., but more especially as a merchant, the writer proceeds thus:

"You pass through Roxbury to his place, which is the first house in Dorchester, on the road to Milton and Quincy. It is called Hawthorne Grove, and is one of the most delightful suburban residences in the vicinity of Boston.

Here he conducts you to the plants which you are curious to examine, and speaks to you of their history and habits. He guides you through his conservatories, deservedly ranked among the best furnished in the country; and with the plants therein he appears as familiar as Cyrus was with the soldiers in his vast army, calling them by name, and giving at pleasure their locality and family connections. We will suppose that you pass on through these conservatories into his garden, tastefully laid out and adorned, and thence into his nurseries, which cover about ten acres in the highest state of cultivation, and which contain many thousands of young fruit trees, particularly the pear. For the last species of fruit his grounds are as distinguished as his green-houses are for the best varieties and the most extensive collection of camelias. Of the pear, he has exhibited, at one time, three hundred and seventy-five varieties.

When you have accomplished the object of your mission and taken your departure, reflection suggests the inquiry how a gentleman engaged in a mercantile business so extensive, can have acquired a fund of information so varied and extensive, a knowledge so profound of the sciences of horticulture, agriculture, and kindred arts. A word of caution is needful before we answer this question. It may not be wise nor safe for every merchant to prosecute so many and such varied subordinate pursuits. Singleness of purpose and concentration of energy are the general rules of success. All have not the same versatility of genius, the same adherence to system, the same inclination, taste, and indomitable perseverance. Each must study himself, and thus ascertain what he can attempt with safety, and with a reasonable prospect of prosperity and happiness. So much variety in the objects of pursuit, while it would probably distract or perplex most persons, would utterly disqualify some for business, and insure their loss of health, fortune, and life.

A more familiar acquaintance with Mr. Wilder's natural endowments and

considered a candidate. In common with his numerous friends, we sympathize tenderly with him in the repeated domestic bereavements with which he has been visited the last year; and especially in the recent affliction under which he now mourns the recent death of a son. His decision is one which our readers, many of our merchants, and the farmers throughout the country, will deeply regret."

private habits, discloses the manner in which he has been enabled to make so extensive attainments, and to pursue objects so various. Blessed by nature with quick perceptive faculties, and unusual versatility of mind, he acquires with ease and rapidity, and readily applies his acquisitions to his numerous and varied employments. Besides, he is a rigid economist of time, a close adherent to system. Every hour has its appropriate business, which is attended to in its appointed season. In the evening, and at early dawn, he is in his well-selected and valuable library, either investigating subjects which the labors and scenes of the past day have suggested, or planning the business of the approaching day.

When his gardeners, nurserymen, and others employed on his place present themselves at however early an hour in the morning, his rule is to meet them, and assign to each company its appropriate business, under its respective foreman, who receives the requisite instruction and orders. Away they go to their work, and he returns to breakfast with his family, and with them to acknowledge the Giver of all their mercies.

Next he goes forth to see that each man is at his post, performing his duty in the best manner, to drop a word of encouragement to the industrious and faithful, and by his own example to encourage and instruct them, now training a vine or giving a finishing touch to a bouquet, then wielding the spade or the pruning-knife, hybridizing a camelia, planting a tree, inserting a bud, sketching a flower, or gathering the first fruit of a new variety of pear for subsequent study, delineation, and description. At ten o'clock, or thereabout, he doffs his garden robes, and is attired—in his carriage—and on his way to Boston, where the rest of the day is devoted to his mercantile business. This system he has steadily pursued for a long course of years; and in his strict adherence to it lies the secret of his success, and of his elevation to the distinguished position which he holds as a merchant, a horticulturist, and an agriculturist.

Hitherto we have spoken of him principally in the first of these capacities. But we must also notice his progress in the others, related to the former in his multifarious business, as the planets to the central orb around which they revolve.

When Mr. Wilder moved from Boston to his present residence, he was associated with gentlemen of taste in the Massachusetts Horticultural Society, with such men as Dearborn, Phinney, Fessenden, Lowell, Manning, Story, Everett, and Webster, and with others of fair fame who still live. The object of this organization was the promotion of horticulture; and as a means to that end, it contemplated the publication of its transactions, a library, exhibitions of fruits and flowers, an experimental garden, and a rural cemetery. The two latter of these it sought to realize by the purchase of Mount Auburn. But many of the proprietors in this Pere la Chaise of America felt little interest in the legitimate object of the Association. At length it was deemed expedient to give exclusive control of the Cemetery, while the original organization should confine its efforts to horticulture.

But a large sum had been invested in this purchase, and a considerable annual income was accruing from the sale of lots. On the motion of Mr. Wilder, the terms for the separation of the cemetery interest from the Horticultural Society were referred to a joint committee, and after much deliberation were agreed upon. By these, the Horticultural Association received one fourth part of the income of the Mount Auburn Cemetery from the sale of lots, an arrangement that has proved in the highest degree beneficial to both

bodies, and for which the Horticultural Society are much indebted to Mr. Wilder and his associate, Hon. Elijah Vose.

In 1840, he was elected President of the Massachusetts Horticultural Society, an office which he filled with honor to himself and to that Association for eight years. During his administration, it greatly increased in the number of its members, in its resources, usefulness, and respectability. It erected its beautiful hall in School street, at the laying of the corner-stone and the dedication of which he delivered appropriate speeches.* It held two triennial festivals in Faneuil Hall, occasions which congregated the *elité* of city and country, and which will long be remembered for their luxurious entertainments, and for their soul-stirring speeches from Webster, Everett, and other chief masters of eloquence. When he retired from the office, the Society accompanied its resolutions of thanks with a silver service, as a substantial testimonial of its gratitude for his valuable labors.

Both before and since that period, he has contributed largely for the advancement of pomology by the annual importation of fruit trees from the chief European cultivators; by the encouragement of nurserymen; by the cultivation of trees and plants in variety in his own grounds; by his extensive correspondence with fruit-growers; and by his addresses and communications devoted to this interest. Hence, upon the organization of the American Pomological Society, a national institution, embracing the various States and territories of our Union, he was elected President of that body, an office to which he has been elected for the third time.

At its session in Philadelphia, September, 1852, he delivered, by appointment, a most eloquent eulogy on the life, labors, and death of his intimate friend, Andrew Jackson Downing, the great rural architect and landscape gardener of America, who perished in the conflagration of the steamer Henry Clay, on the twenty-eighth of the preceding July; a gentleman who was an honor to his country, and was honored by her, and was distinguished on both sides of the Atlantic for his numerous publications and valuable services.

The closing paragraph of that production we will quote as an illustration of the force of Mr. Wilder's diction, the beauty of his style, and the range of his thoughts:

'Downing is dead! Yet how little of such men can perish! The clayey tenement may indeed fall and crumble; but to him who dwelt in it, a place is assigned in the firmament of American genius, far above the storms and convulsions of earth, in that clear upper sky, where he shall shine for ever to illumine the path of intelligence, enterprise, and virtue, and henceforth to enkindle in the human mind a love of order, taste, and beauty. We rank him with those who start improvements which advance ages after they are dead, and who are justly entitled to the consideration and gratitude of mankind. Washington and his illustrious associates are dead; but the liberty which they achieved still lives and marches in triumph and glory through the earth. Franklin is dead; but the spark which his miraculous wand drew from heaven speaks with tongues of fire and electrifies the globe. Fulton is dead; but he awoke the spirit of invention which turns the machinery of man—aye, he awoke also the genius of navigation—

'And heaven-inspired
To love of useful glory, roused mankind,
And in unbounded commerce mixed the world.'

* See its Transactions for 1845.

Downing also is dead; but the principles of artistic propriety and ornament, of rural economy and domestic comfort, which he revealed, await a more full and perfect development; and as they advance toward their glorious consummation, grateful millions will honor and cherish his name. His memory shall live for ever.'*

At the recent meeting of the Pomological Association in Boston, Mr. Wilder was reëlected its president, and delivered an able address on the arts of cultivation, and other topics, embodying the results of his long and valuable experience.

In conclusion, he exhorted the members to diligence and perseverance, and said: "Gentlemen, go on. Prosecute the work you have so honorably commenced. Sow the seeds of your best fruits, raise new varieties, ply the arts of judicious cultivation, study the laws of nature, and extend your researches and labors, till our beloved land shall be adorned with orchards, vineyards, and gardens, and man shall realize the poet's idea of Paradise Regained."†

During the sessions, which lasted three days, Mr. Wilder gave a magnificent Pomological Levee, at which about two hundred gentlemen were present, including his Excellency the Governor of the Commonwealth, and other distinguished guests. The editors of the *Horticulturist*, in their description of the occasion, say: 'The table was the richest and most tasteful we have ever seen;' and this was the expression of many who have attended the most brilliant affairs of this kind ever given in Boston. The occasion was free from formalities. Sentiments were given by the host, and responded to in brief speeches. At the close of the session, Hon. Mr. Benson, M. C. from Maine, proposed the following resolution:

'*Resolved*, That the thanks of the Society are most cordially presented to the President, Hon. Marshall P. Wilder, for the prompt, able, and impartial manner in which he has presided over its deliberations; and we hereby assure him that the members will long cherish a lively recollection of the pleasure enjoyed at his bountiful and brilliant festive entertainment with which he complimented the Society.'"

We do not prepare this paper so much for the purpose of doing justice to the subject of it—the testimony is not shut up in our pages—but partly because it is a most pleasing task, and still more because we would add our little word of encouragement to those who, with strong powers, and perhaps not unfavorable circumstances, have it in their power, with the blessing of Heaven, to exercise an influence on their associates and successors that shall one day work out an earthly paradise.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

CORN IN NEW-HAMPSHIRE.

MESSRS. EDITORS: The cultivation of Indian corn does not receive the attention that it deserves from the farmers of the North. It might rank next to the grass crop, which is undoubtedly the first in the Northern States. It is not an uncommon thing to hear sensible farmers talk about its costing one dollar per bushel to produce this grain, but this talk is all moonshine. No one that has kept debt and credit will make such a statement. Large crops

* Proceedings at American Pomological Congress, 1852. † Transactions for 1854.

of this grain can be produced among the rugged hills of New-Hampshire, by judicious cultivation, and with less injury to the soil than is occasioned by most other white crops, while it furnishes the largest amount of feed for stock, which can be returned back again to the soil in manure.

The unprecedented drought of the past season reduced our crop of corn, perhaps one third from that of the previous year, which was uncommonly large, ranging from thirty to over one hundred bushels per acre in our vicinity, on well-cultivated land.

Since my remembrance, our vicinity furnished corn for market. Now they buy largely, while the soil is equal to any in the county of Rockingham, for producing this grain. We might and ought to produce our own bread, if we would but come up to the work. What has been done can be done again. Good soil is a good thing, but good cultivation is better.

Our opinion is, that manuring for a series of crops for the raising of this grain is the best system, all things considered. Corn is a great feeder, and is seldom injured by high manuring, as some other crops are. Our system is, spread on the sod, and plough in late in the fall. On land that is liable to wash, and of a dryish order, the furrow should run across the slope to prevent it from washing. On moist land, plough in the fall; in the spring, cart on and spread a good coat of fine manure, and give it thorough harrowing. About the 20th of May, plant and keep clean through the season. Allow no weeds to seed. The next year, sow to wheat and clover, then three or four years in grass, then plough and manure again, and plant to corn. The advantage of this system is this: The corn takes off the heat of the manure; the manure assists in readily decomposing the vegetable fibre in the soil, and hastens on the crop to maturity, so that it escapes the early frosts, while a crop sparingly manured will be a week or two later, and may be caught by the frost.

The second year the land is in fine condition for a crop of wheat, nor will it be so likely to mildew as newly-manured land will. If it would not be out of place, we would state the cost of growing a patch of corn the past season, by estimation one acre:

56 bushels of corn, - - - - - - - - - - - - - - -	$67 20
Top stalks, etc., - - - - - - - - - - - - - - - -	25 00
Whole value of crop, - - - - - - - - - - - - - -	$92 20
Whole cost of cultivation, interest on land, taxes, etc., -	32 50
Net income, - - - - - - - - - - - - - - -	$59 70

By the unprecedented drought, this crop was injured at least one third from what it would have been, if we had had rain in the proper time. The stalks were topped the last week in August, and harvested the third week in September. The manure on a part of the piece proved an injury, owing to the drought. We do not say that this is a great crop; but, under all the unfavorable circumstances, it is a paying one. The land is, at least, worth twenty per cent more for the four next succeeding crops, than it was before it was ploughed.

D. L. HARVEY.

Epping, N. H., January, 1855.

FAT HOGS.—David Robinson, of Russel, Geauga Co., sold in our market the other day three hogs weighing 421, 480 and 680, respectively. The last was a huge animal.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

CROPS IN VIRGINIA.—SOUTHERN PLOUGHS, ETC.

MESSRS. EDITORS: Since my communication of the 6th ult., we have had an open winter, with little or no snow. The first two weeks of December were cold, giving a good supply of ice, and the ice-houses were generally filled. The last forty days have been unusually pleasant for winter months, and have been very favorable to our stock. Sheep, up to this date, have scarcely been fed at all. My flock has not been fed a handful of any thing, and have given me no trouble, further than salting once a week. My cattle have not consumed half the usual quantity of feed; and should the close of the winter months continue favorable, we will be enabled to get through winter full as well as in years past, when plentiful crops were made.

The farming community have availed themselves of the open winter, and much ground has been ploughed for the corn crop. The Virginia State Agricultural Society is to have a good influence on the farming community. We are getting to plough better than formerly, and more attention is paid to a regular rotation of crops; and there is more attention paid to good stock. Horses, cattle, sheep, and hogs are better attended to than formerly. The three-horse plough is in more general use; most of our best farmers use it. The ground is deeper and better ploughed, which saves our rolling lands from being as badly washed as under the old practice. Our lands also stand a drought much better from being deeply cultivated. The subsoil plough is but little used as yet. We have no good plough of this description amongst us, so far as my knowledge extends. We have two kinds of hill-side ploughs: one invented by Bradley, and one introduced by Messrs. Leyburno, and now manufactured by Messrs. Taylor & McDowell, all of our county, which do pretty good work. The best plough we have is one introduced some fifteen years since, of various numbers, from 1 to 4, by S. Bradley & Co., and called the Livingston Plough. It is simple in its construction, and can be kept in order by any ordinary ploughman. They are also cheap, ranging from $4 to $8.50, *cash*, for one, two, and three horses. They have been put in competition with many of the best ploughs from the North; and our real practical men say, taking all things into account, they are equal, if not superior to and plough ever introduced here. The cutters and land-sides, when worn out, are easily replaced, and with a wooden pin that any one can make, are firmly fitted and as good as new, till the mould-board is worn out. They are entirely of cast-iron, except the beam and handles, with two or three pins. This plough is not easily broken, but may be butted up against fixed rock without danger. More ploughs are broken by inexperienced ploughmen, by trying to slide over rocks, than in any other way. A good ploughman, with a steady, firm hold on his plough-handles, buts up against a rock or stump, then draws back, and starting slow, with a steady team, ploughs all his ground, and rarely breaks a plough. But if you hop from rock to rock, to save the plough, you often split the mould-board, lose half a day in going to the foundry for a new one, and paying $1 to $2 to repair damages. There are many other good ploughs in our valley, and I have examined samples manufactured in Richmond, Baltimore, the States of Massachusetts and New-York—ploughs that cost more money, and withal more complicated—yet I have seen none that I consider superior to the Livingston County plough. The left-hand plough is generally in use with us. This plough took a pre-

mium at the cattle show and fair, held at Syracuse, September 29th and 30th, 1841.

We have had quite a gale since 2 P. M. yesterday, 21st; heavy rain, last night, with thunder and lightning. The mercury is falling. From noon yesterday till noon to-day the mercury has fallen 26°, and still going down. Annexed, I send you the state of the mercury at daylight, since 1st December, 1854:

December	1, 28°	December	19, 26°	January	6, 38°
"	2, 32	"	20, 12	"	7, 54
"	3, 33	"	21, 30	"	8, 36
"	4, 26	"	22, 20	"	9, 35
"	5, 16	"	23, 26	"	10, 36
"	6, 17	"	24, 34	"	11, 32
"	7, 32	"	25, 44	"	12, 42
"	8, 14	"	26, 50	"	13, 50
"	9, 15	"	27, 50	"	14, 22
"	10, 26	"	28, 48	"	15, 24
"	11, 38	"	29, 38	"	16, 32
"	12, 34	"	30, 16	"	17, 38
"	13, 38	"	31, 34	"	18, 40
"	14, 35	January	1, 31	"	19, 26
"	15, 32	"	2, 30	"	20, 34
"	16, 32	"	3, 36	"	21, 40
"	17, 38	"	4, 44	"	22, 27
"	18, 36	"	5, 44	"	23, 18

Your obedient servant, etc.,

HENRY B. JONES.

23d January, 1855.

CHEMICAL EXAMINATION OF THE COB OF MAIZE.

BY J. H. SALISBURY, M.D.

It is well known that the manure of an animal varies in quality with the food which it eats; and that, generally, manure is richer in nitrogen bodies, and less rich in non-nitrogenized matter than the food consumed. Probably a greater proportion (though I do not know as this has actually been demonstrated) of 100 lbs. of nitrogen bodies would be assimilated by the system, if it were mixed with 500 lbs. of non-nitrogenized matter; and still more, if mixed with 1000 lbs., than if taken into the system undiluted or alone. It should be borne in mind that it is as essential for food to contain bodies destitute of nitrogen, (such as starch, sugar, oil, etc.,) or those that go to support animal heat and respiration in the body, as it is to have nitrogen compounds to nourish or supply the waste of the living tissues. Hence, food suited best to sustain animal life, is that which is made up of these two classes of bodies mixed in the proper proportion. And a deficiency in the one is equally as deleterious to the healthy existence of the animal, as a deficiency of the other; therefore we can hardly say that one of these classes is in reality more essential to the maintenance of life than the other. They both seem to perform equally important offices. If this view be taken, the cob can not be regarded as deficient in those bodies which contribute to respiration and nutrition. The following table shows about the amount of the seve-

ral proximate organic bodies thrown away in rejecting the cob, calculated from the analysis of the small white flint variety; 1000 lbs. of ears contain not far from 200 lbs. of cob and 800 lbs. of grain. These contain the following bodies in the following proportions, expressed in pounds and decimals of a pound:

	200 lbs. cob.	800 lbs. grain.	1000 lbs. ears.
Sugar and extract, - - - - -	13.582	115.320	128.902
Starch, - - - - - - -	.003	487.384	487.387
Fibre, - - - - - - -	127.687	7.712	135.399
Oil, - - - - - - -	....	39.824	39.824
Zein, - - - - - - -	....	31.856	31.856
Matter separated by potash from fibre,	45.404	51.856	97.260
Albumen, - - - - - -	1.518	37.136	38.654
Casein, - - - - - - -	.288	.688	.976
Dextrine, or gum, - - - -	2.310	28.224	30.534
Resin, - - - - - - -	1.806	....	1.806
Glutinous matter, - - - -	7.402	....	7.402
	200 lbs.	800 lbs.	1000 lbs.

In the above table, the inorganic matter is not separately considered, it being distributed among the several organic bodies. By rejecting the cobs of 1000 lbs. of dry ears, about 200 lbs. of organic matter is lost, which consists of 13½ lbs. of sugar, and extract 127½ lbs. of fibre, 45½ lbs. of matter, separated from fibre by a weak solution of potash, 1½ lbs. of albumen, .288 of a pound of casein, 2.31 of gum or dextrine, 1.8 lbs. of resin, and 7.4 lbs. of glutinous matter. Hence the cob, though not rich in nutritive matter, can by no means be said to be destitute of those proximate principles which go to support respiration and sustain animal heat, and those which are capable of being transformed into nerve, muscle, etc, and the phosphates which contribute so largely to the formation of bone.

CORN STATISTICS IN FRANCE.

The *Siecle* says: "According to the latest statistical returns, the crop of every kind of corn in an average year in France now amounts to about 180,000,000 of hectolitres. In wheat, our country produces 60,000,000 of hectolitres; rye, 26,000,000; barley, 19,000,000; *Metiel*, (a mixture of wheat and rye,) 1,500,000; oats, 40,000,000; buckwheat, 8,000,000; maize and millet, 7,000,000; small grain, pulse, etc., 2,500,000. The crop of wheat is, therefore, in the proportion of 60 to 180; that of oats, 50 to 180; and that of rye, 23 to 180; that is to say, these three descriptions of corn compared with all the others, are in the proportion of 103 to 77 only. This quantity of 180,000,000 of hectolitres of corn is not all consumed; deducting 25,700,600 hectolitres, for seed, there remains 154,300,000 for the general consumption. As, however, oats, the net production of which is 39,250,000 hectolitres, can not be reckoned as human food, we find that the quantity remaining for the food of the people is 115,050,000 hectolitres. If we now take the different crops by weight, which is the best manner of estimating the nutritive value of each, it may be said that the average weight of wheat is 75 kilogrammes per hectolitre, that of rye 65 kilogrammes, barley 60 kilogrammes, *Metiel* 70 kilogrammes, buckwheat 60 kilogrammes, maize 78 kilogrammes, and dry pulse 80 kilogrammes. It follows, therefore, from these bases that with 51,500,000 hec-

tolitres of wheat, weighing 3 millards of kilogrammes, and the other quantities of corn in proportion, we have a total weight of 8,046,800,000 kilogrammes of corn fit for consumption of man. It has been calculated that on an average including women, children, and old people, it requires 220 kilogrammes of corn per year for the food of one person. This would, therefore, be for France, where the population is reckoned at 36,000,000, a total of 7,920,000,000 kilogrammes. If, therefore, from 8,046,800,000 kilogrammes calculated, as above stated, for human consumption, there be deducted the 7,920,000,000, which suffice for the consumption of France, the following result which must be satisfactory to every one, is come to—namely, that France, in an average year, has a crop of 127,000,000 kilogrammes of corn beyond the wants of the people, and that she could still feed 600,000 inhabitants more than the present number of her population."

FLOWERING OF FRUIT TREES IN 1854.

We copy the following interesting table from the *American Almanac* for 1855. The work is replete with useful information. See our Notices of New Books.

PLACES.	PLUM.	PEAR.	PEACH.	CHERRY.	APPLE.
Cambridge, Mass., .	April 30	April 30	May 3	May 5	May 10
Woodstock, Vt., . .	May 10	....	....	May 15	May 22
New-Haven, Ct., . .	....	....	April 25	....	May 6
Lambertville, N. J., .	....	....	April 24	April 24	May 1
Perth Amboy, N. J., .	April 30	....	April 25	April 27	May 28
King George Co., Va.,*	....	April 8	Mar. 17–22	April 5	Ap'l 15
Savannah, Ga.,† . .	Feb. 15	....	Feb 15	....	Mar. 1
Muscatine, Iowa, . .	May 3	May 6	May 3	May 1	May 8

* The fruit was generally killed by the excessive cold weather in April, after a very mild March. Snow and ice, April 15; frost, May 1.

† Frost, early in April, killed the early fruit.

HEREDITARY SPAVIN—CAUSE, ETC.

The following article on "Hereditary Spavin in Horses," is taken from the London Farmers' Magazine:

Spavin and other Ossific Enlargements, the predisposition to which may be either constitutional or local, are composed of the earthy matters of bone, chiefly invading the tissues low in the scale of organization, such as cartilage and fibrous cartilaginous substances; injuring the structure and functions of the parts, by rendering them rigid and inelastic; and causing partial or complete lameness, depending on the situation and extent of the deposition.

It is perfectly well ascertained that the progeny of some horses inherit a constitutional tendency to splints, spavins, ring-bones, and other bony deposits, without exhibiting any peculiar conformation of limbs or joints to account for it. There are instances of an *ossific diathesis*, transmitted from parent to offspring; but, on the other hand, this hereditary predisposition more commonly depends on faulty or peculiar conformation.

Thus horses most disposed to *spavins* are those possessing short pointed hocks, deficient in width and breadth below, and disproportionately small, compared with the upper portion of the joint. Those most disposed to *ring-bones* are horses with upright pasterns and high action; and those most

liable to *ossified cartilages* are the heavy draught breeds; so much, so that it is no uncommon case to find the cartilages of the feet of horses of this character changed into bone at four and five years old. The reason of this is evident enough; concussion is easily produced in the joints of the character of horses described; inflammation of a slow chronic kind follows as a natural consequence, and osseous effusion is the result.

There is no difficulty in establishing the hereditary character of these diseases. Taking spavin as an example, we have numerous and unquestionable cases to produce. Some ten or a dozen years since a spavined thoroughbred stallion served mares in the neighborhood of Truro, and in a few years afterwards it was really astonishing to see the number of his stock that were similarly diseased. One striking circumstance connected with this horse is much to the purpose. A half-bred mare, one of the stock, exhibited spavins at four years old, and, becoming unfit for fast work, was kept for breeding purposes and occasional work on the farm. Two of the mare's stock also exhibited spavins in a short time after the breaking.

There is a curious case recorded in the Veterinarian, by Mr. Percivall, of a thorough-bred horse, called Dominie Sampson, that had run very successfully on the English turf, and, although fired in both hocks, was inconsiderately purchased for the East India Company, and was sent out as a covering stallion to the stud at Buxar, where for years he had forty mares annually, and the whole of which generally proved with foal, but were affected either with curbs or spavins, and only *one* of his stock was passed into the cavalry; consequently he was discharged from the stud.

Curbs are frequently found in horses exhibiting the character of hock described in the last example, and are generally caused by injury of the annular ligament from over-exertion, producing swelling and inflammation about three inches below the point of the hock formed by the *os calcis*. The peculiar form of this bone appears to be connected with the cause of the disease. Its chief purpose is to act as a lever for the action of very powerful muscles, the tendons of which are inserted into its extremity, and in proportion to the projection of this bone will the muscular energy be increased by which the joint is moved. On this account its length is a matter of considerable importance. It is supposed also to assist indirectly in supporting the superincumbent weight with the other bones of the hock, and materially assists in preserving these parts from the effects of concussion. But when the os calcis is short, forming a pointed hock, the leverage or mechanical power is injuriously diminished, leaving too much for the other parts of the joint to perform, and concussion is the common consequence, followed by inflammation and lameness, sometimes connected with curbs, at other times spavins or thorough pins; and it is not an uncommon case to see all three of these diseases in the hock at one time. There are other formed hocks, which even more dispose to curbs than the one just mentioned; such are the "sickle-hock" or "cow hock." We can scarcely name any disease of the horse which affords stronger evidence of a hereditary tendency derived from peculiarity of structure than the one we have been considering.

ITALIAN RYE-GRASS.

This grass, recently introduced into the United States, is either a native of Italy or Germany, and is probably perennial. It differs from the common kinds of rye-grass in many botanical particulars, which it is needless to enu-

merate, and which are only intelligible to the scientific eye; but to the ordinary observer, it differs very perceptibly in presenting a darker green color, and in having much more abundant and broader foliage. It very commonly attains the height of four feet, and sometimes more, and is not inclined to spread on the ground. If sown in September, it may be cut in the following May; and if sown early in March, it will yield a heavy crop in July. Whether given as green food or converted into hay, it is eaten with avidity by cattle, which have, in various instances, manifested their preference of it to the common sorts, which is accounted for by its superior succulence and softness. It braids much quicker than any other species of rye-grass known to us, arrives sooner at maturity, and is in every respect superior to all of them. As it overpowers clover if sown with it, it is useless to sow them at the same time; and the only chance of their doing well together would be on poor soil, where the vacancies between the turfs of rye-grass might be filled with clover, to be available in the second or third mowings. It is sown in the usual way after a harrowing, and covered with a bush-harrow and a roller, and the quantity of seed for clean ground is about twenty-one pounds per acre. Among its other good qualities, it is found to withstand the influence of frost better than any other varieties of grass. In a word, it is a decided acquisition to our agriculture.—*Genesee Farmer.*

This growth is very highly commended by those who have had extensive experience. Two or three growths may be cut in a single year. For soiling it is very superior.—[Ed. P., L., & A.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

ARTIFICIAL MANURES.

Messrs. Editors: I have noticed, with much pleasure, the prompt and decided stand you have taken in some of your late numbers, in exposing the frauds that are practised in the manufacture and sale of artificial manures. Every farmer who has made, or intends to make, use of these manures, will, no doubt, feel their obligations to you for the exposure you have given, and which will, in all future purchases, keep them on the look-out for frauds, to which they are so often exposed.

From the article in your last issue, it appears that in an instance where the purchaser complained to the vender of the impurity of the article bought, he was consoled by the soothing assurance that it "contained the quantities suitable for plants." How kind it was in this vender to get up the article in just the right proportion, and mix in so much foreign matter that "*the plants*" should not get an over-supply of that which was, no doubt, cracked up loudly as something essential to their healthful growth!

Now, after many years' experience on the farm and among manures, we have never seen an instance where farmers could not apply substances beneficial to the soil in just the right quantities for plants, without being at the extra expense arising from the purchase of adulterated articles; and we know of no reason why such unwarrantable frauds should be practised without exposing their perpetrators to such punishments as swindling of the baser sort demands.

What would be the result if the farmer should adulterate the articles of produce he sends to market? In the first place, he would have to restore to

the purchaser all moneys he received over the actual value of the article sold and if he escaped without paying heavy damages for the imposition practised, he might think himself fortunate; and then, if such frauds became common, laws of greater stringency would be passed in order to overcome such evils. All this would be right—for farmers, like all others, should be honest; and when they show an inclination to the contrary, it should be checked, so that, whatever temptations may await them, the power of law, where their own love of right would not do it, should keep them in their legitimate bounds.

The same rule should apply to men in other employments. The farmer should be protected from frauds as well as other men are, and in the manures he purchases, as well as in other things; for what he suffers in these matters arises from a failure in his harvest, and, of course, in the loss of hard labor, as well as in the cash he pays out for valueless, useless property, and through his sufferings the community must suffer from deficient crops.

It is apparent enough, that the evils of these frauds in artificial manures are, in each successive year, becoming more and more common in our country, and all under the *pretense* of benefiting the farmer.

We know of but two ways of remedying this evil: One is to make it a penal offense for any one to manufacture or sell adulterated artificial manures, and to carry out this, a responsible and intelligent inspector should be appointed for every mart where such manures are offered for sale, whose duty it should be to brand every parcel just in proportion to the purity of the article it claims to be, whether first, second, or third quality, beyond which it should be condemned.

In the second place, farmers should look more to their own resources, and less to the manufactures for the means of improving their soils. Where is the farmer, in all our country, that avails himself of all the means at his command for increasing both the quantity and value of his manure-heaps? What wastes of some sort are to be found, even on premises the most economically managed! How far can the manures offered as merchandise in the market be manufactured at home, at less expense than they cost, and of a superior quality?

These are questions for each farmer to answer; and in looking over the matter, the mass, if not all, we are sure, will find that available means, not hitherto adopted, are within their reach of increasing their crops, and beautifying their lands with luxuriant vegetation without having recourse to swindlers and speculators, who, without conscience or remorse, will turn them off with catch-penny commodities under the assumed names of fertilizers!

Yours truly, W. B.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

CULTIVATION OF SANDY SOILS.—LONG-ISLAND.

MESSRS. EDITORS: A large portion of the soil of the country is of this class, and very little of it is under what may be called good cultivation. The greater part is managed on the skinning or starvation system. That these soils possess many advantages, has been long acknowledged by those who have given the subject the least consideration, whilst their peculiar adaptation to the culture of root-crops is now generally admitted. The absence of alumina and their porous character rendering them unable, in a great measure, to retain moisture, the best portions of manure are lost, either by percolation

or evaporation; and hence has arisen a great objection to the cultivation of this class of soil, which their cheapness, ease of tillage, and facility for raising early crops, do not seem to have obviated. And yet that such soil can be well and profitably cultivated has been long known; witness the barren sand of Belgium and the estates of Coke and Hatherton in England, or, nearer home, the blowing sand near Albany, and some small portions of Long-Island. Their adaptation also for sheep husbandry is well known; and yet, within a few miles of this great city are thousands of acres, every way capable of supporting immense flocks, with not a sheep on them. I have been led to make these observations from a recent trip on the Long-Island Railroad, when, in the space of about fifty miles, I did not see that number of sheep; and, as a friend with me observed, on passing Hempstead Plains, here are the Downs, but where are the South-Downs? Certainly not there. A great many sheep, I understand, are raised on the north side of the island, and the stock is generally improving; Wm. Becar, W. W. Mills, and J. Smith having some fine flocks. Still they are the exception, not the rule, and it is the latter that we want. The growing taste for mutton, and the high price a good article will always command, we think should stimulate the farmers of Long-Island to push forward in what I consider a profitable branch of husbandry; and instead of being satisfied with raising from eight to ten bushels of rye to the acre, and then carrying the straw off the farm, consume it on the farm, and not rest satisfied till they can, from the same land, raise from five to six hundred bushels of turnips. That this can be done, we will endeavor, at some future time to show. L.

ATLANTIC COTTON MILLS, LAWRENCE.

President—J. Wiley Edmunds.
Treasurer—Wm. Gray.
Agent—Henry K. Oliver.
Directors—Abbott Lawrence, Nathan Appleton, John A. Lowell, G. W. Lyman, J. W. Edmunds, George H. Kuhn, Wm. Gray.
Superintendent—Jos. P. Battles.
Paymaster—Samuel C. Oliver.

This Company was incorporated in 1846. Its capital is $1,800,000, divided into 1800 shares, of $1000 each.

Ground was broken for the erection of these mills in 1846; and in May 1849, mill No. 1 went into operation. The mills which are situated between the Pacific and Bay State, in ward 3, are popularly designated as Nos. 1, (west building,) 2, (east building,) and 3, (centre.) The centre or main building was erected subsequently to Nos. 1 and 2, and between them, and they now form one connected structure 577 feet in length. Nos. 1 and 2 are each 220 feet in front, 64 feet wide, and five stories high, including basement, beside attics. The height of each is 65 feet to the eaves. The centre mill No. 3, is 137 feet in length in front, 123 feet in rear, and 100 feet wide. It is six stories high, including basement, or 78 feet to the eaves. Exclusive of these buildings, are two picker-houses 75 feet, 8 inches, by 53 feet, 4 inches, and three stories high; two cotton-houses; No. 1 being 200 feet in length, 50 feet in breadth, and 25 feet in height; No. 2, 120 feet in length, 50 feet in breadth, and 25 feet in height; these buildings are capable of holding 10,000 bales of cotton; a waste-house, 80 feet long, 23 wide, and 15 high;

a boiler-house, 42 feet square, with coal shed attached, 62 feet by 42. It has at present four boilers, but is capable of containing six; steam-chimney 150 feet in height. Canal building, 665 feet long, 40 feet wide and two stories high, exclusive of attic.

The counting-room is in the canal building, and beside a general reception-room, contains the respective offices of the agent, superintendent, paymaster, and clerks.

In the same building is the repair-shop, including iron, carpenter, and blacksmith shops; also a store-room and cloth-room. The building contains in addition, a 15-horse power steam-engine.

In the repair-shop 48 men are employed, under the superintendence of John S. Stafford, head-machinist, and Perley Ayer, head-carpenter. In the cloth-room 20 hands are employed under the direction of Lewis Young, overseer. The number of out-door hands is 25, of which Artemas Harmon is overseer.

Mills Nos. 1 and 2 each contain a carding-room, spinning-room, dressing-room, and upper and lower weaving-room, with the following number of persons employed in each, namely:

Total number of males employed in Mill No. 1, 61; females, 290. The average amount monthly paid to males in this mill is $1800; to females, $4000.

Total number of males employed in Mill No. 1, 60; females, 281. The average paid monthly for wages is, to males 1800; to females, $4000.

Total number of males employed in Mill No. 3, 84; females, 226. The average amount of wages paid monthly to males is 2100; to females, $4100. The whole number of males employed by the corporation is 307; of females, 707; and total employed, 1104.

Machinery.—These Mills are thoroughly supplied with machinery of the most approved kind and in best order, as follows: No. 1, 1 whipper; 3 calvert-openers; 8 pickers; 78 breaker cards; 62 finishers' cards; 2 lappers; 1 lap-winder; 14 railways; 12 drawing frames; 13 speeders, carrying 258 spindles; 19 stretchers, carrying 936 spindles; 54 warp frames, with 128 spindles each; 50 filling frames, of 128 spindles each, and averaging 13,312 spindles; 18 warpers; 10 dressers; 398 looms.

Mill No. 2 contains the same machinery as No. 1.

Mill No. 3 contains 1 whipper; 3 calvert-openers; 8 pickers; 76 breaker cards; 74 finisher do.; 2 lappers, one for 42 cards, and one for 34 cards; 8 railway heads for finishers, 8 cards each; 18 fine speeders, 72 spindles each; 88 warp frames, 128 spindles each, carrying 11,264 spindles; 26 mules, carrying 14,460 spindles—a total of 25,724; 18 warpers; 12 dressers; 530 looms. The whole number of looms in the above mills is 1326; of spindles, 52,348.

Beside the machinery contained in the above, there are 3 folding machines; 3 hydraulic presses, and all sorts of machines necessary for repairing at the mills; also for making rolls, banding, belts, etc.

Thirteen thousand bales of cotton are annually used, averaging 450 lbs. per bale. The goods made are Nos. 14 and 24, shirtings and sheetings, of various widths; 285,000 yards are manufactured weekly, or about 15,000,000 yards yearly—equivalent in length, for every year, to eight thousand miles, or one third the circumference of the globe. The power is supplied by three of Boyden's iron Turbine wheels, 8 feet in diameter, and of 500-horse power each. The surface embraced in the mill-site comprises an area of 300,000 feet.

The Company have six blocks of brick boarding-houses, three stories high, exclusive of attics, containing spacious tenements. One half fronts on Methuen street, and the other on Canal street. The houses are built in the most substantial manner, in which taste and convenience are combined. Shade-trees are planted on either side, thus giving them a pleasing and attractive appearance.

In September, 1851, at a meeting of the overseers, a library association was formed, and a library commenced by the donation of one hundred volumes and a loan of fifty dollars from Gen. H. K. Oliver, the Agent. Subsequently $50 and 24 volumes of Littell's Living Age were presented by Wm. Gray, Esq., Treasurer of Mills. Donations were afterward received from Amos Lawrence, Esq., and the Lawrence Tract Society. Recently the directors have appropriated $500 for the library, and the Company will pay the future expense of the same. It now consists of 1500 volumes, and is annually increasing. It is kept in the Canal building, and is FREE to all in any way connected with the mills.

Much attention has been paid to the social and moral condition of those engaged in the mills, and the agent has been indefatigable in his efforts to promote the best welfare of all concerned. The regulations require a proper observance of the Sabbath, and a regular attendance at some place of public worship. The reception of company, or any rudeness or disorder is strictly prohibited on that day in all the boarding-houses.

Altogether the Atlantic Mills are a model of neatness, order, and excellence. The most perfect harmony exists between the various departments, reflecting the highest credit upon the management of so extensive a corporation. As might be expected, this corporation is in a highly flourishing condition, having for some time past declared semi-annual dividends.

While establishments like the one above described are thus successfully contributing to the national wealth; creating a home market and affording employment to thousands, it is gratifying to know that they are conducted with the highest regard to the best interests of the employed. And so long as the social, moral, and intellectual wants of those connected with them are duly considered and regarded so long should proprietors and agents receive the meed of approbation from an enlightened and intelligent community.

We collate the above statement from a recent number of the *Lawrence Sentinel*. But we are not willing to dismiss the topic without adding OUR OWN testimony, from long and intimate acquaintance with the accomplished agent, to his earnest endeavors to promote the welfare and happiness of his operatives, as well as to advance the interests of the Company. When we contrast his policy with what we have sometimes (but thank God, not often) seen in some other establishments, in other places, we are prompted publicly to thank Gen. Oliver for his noble and successful example. God bless him and his, and all who follow in these his footsteps, and let every one of our readers say, AMEN.

POPULATION OF MICHIGAN.—We have before us the population of Michigan, taken this fall by State authority. It exhibits a very rapid growth. All the counties are given except eight small ones, and the number is 518,698, estimating the omitted counties. Four years ago, the census returns made Michigan contains 397,967; increase in four years, 120,731, or 30 per cent. The same rate of increase would elevate Michigan to about 700,000 in 1860.

GOOD COFFEE.

THERE are comparatively few who can prepare a cup of good coffee. In this, as in wines and liquors, the taste of the many is so depraved by use that they do not relish the best specimens. We once knew a country wine-dealer who returned, as unfit for his market, the ONLY cask of imported wine ever sent to him by his city correspondent. It would not be strange if similar *wisdom* should be developed in the matter of coffee. "Who is to determine what is best?" We suppose they are to decide who are most devoted to the business, and have been longest under the best instruction on the subject. The Chinese best know how to use tea; and those who acquire the art from them are next in order. The Turks have been long famous for their coffee, and so have the French. If any of us do not like such coffee, then we must adopt our own plans. But we can not claim to be *the* only sensible people on this subject. One might not relish a segar that would be pronounced capital by an old Spaniard, and yet the Spaniard is by far the best judge of what "good" tobacco is. So it is with all artificial preparations. Use may accustom us to think almost any thing "the best." We go against the long boiling of coffee or long steeping of tea. We thereby get an excessive proportion of the *bitter principle*, which is no advantage to the flavor of the beverage. It is not this which abounds in almost every plant that we desire, but it is the peculiar flavor of the berry of the coffee, and of the leaf of the tea. This flavor exists chiefly in its oil, its essential oil. When this is obtained by the use of alcohol, it is called an essence. When this alcohol is taken from the essence, the essential oil remains.

In Knighton's "*Forest Life in Ceylon*," are the following hints on the preparation of coffee, derived from long experience: "The subtle aroma which resides in the essential oil of the coffee-berry is gradually dissipated after roasting, and of course still more after being ground. In order to enjoy the full flavor in perfection, the berry should pass at once from the roasting-pan to the mill, and thence to the coffee-pot; and again, after having been made should be mixed when almost at a boiling point, with hot milk. It must be very bad coffee, indeed, which, if these precautions be taken, will not afford an agreeable and exhilarating drink. Two great evils are constantly perpetrated in England in its preparation, which are more guarded against in almost all other countries, and which materially impair its flavor and strength—keeping the coffee a considerable time roasting or grinding, by which its strength is diminished, and its delicate and volatile aroma lost, and mixing the milk with it after it has been allowed partially to cool."

He who can not indorse this from his own experience, has not entered far into the mysteries of the culinary art, and yet how many families boil their coffee and tea almost by the hour, "so as to get the strength out." We had almost as lief drink an infusion of peas or of rye, as such coffee. Rather than partake of this, we would secure what passes out of the nose of a boiling coffee-pot. This vapor might be passed by a tube into a closed vessel filled with hot water, from the top of which a tube should descend into the liquid, as a safety-valve. After long-continued boiling, we have no doubt that this second vessel would contain a better-flavored beverage than that in the pot; and if the quantity of water was properly graduated, it might not be very weak. It certainly would be worth saving and restoring to the pot.

But when the "coffee" is bought of the grocer, already burned and ground, and then is prepared by long boiling in a coffee-pot, from which there is

abundant evaporation, the wretched stuff is, at best, but a poor apology for well-prepared coffee. Especially as it is often "settled" so very imperfectly as to deposit large quantities of *mud* on the bottom of each cup. Under our personal or family direction, neither our coffee nor chocolate will present any *such* evidence that any powdered or solid material has been employed in the preparation. We think there is no part of the culinary art in which people are so self-sufficient and yet so ill-informed.

BEST POSITION OF FIRES FOR WARMING APARTMENTS.

A VERY valuable paper on this subject has been read before the London Society of Arts, by Dr. Arnott. He goes into a full exposition of several popular errors on this subject, and then proceeds as follows:

"These explanations being premised, the two popular delusions respecting the low fires become at once apparent.

1st. The supposition that fuel burnt in a low fire gives out more heat, has arisen from the experimenter not reflecting that his hand held over the low fire feels not only the heat radiated from the fire itself, but also that reflected from the hearth close beneath it, which second portion, if the grate were high, would have room to spread or radiate downward and outward to the more distant floor or carpet, and so warm them.

2d. The notion that the fire, because near the floor, must warm the carpet more, springs from what may be called an error in the logic of the reasoner, who is assuming that the hearth, floor, and carpet, being parts of the same level, are in the same predicament—the truth being, however, that, in such a case, the hearth within the fender gets nearly all the downward rays, and the carpet almost none—as a candle held before a looking-glass at a moderate distance diffuses its heat pretty uniformly over the whole; but if moved close to one part of the glass, it overheats, and probably cracks that part, leaving the rest unaffected. A low fire on a heated hearth is to the general floor or carpet of a room nearly what the sun, at the moment of rising or setting, is to the surface of a field. The rays are nearly all shooting upward from the surface, and the few which approach it slant obliquely along or nearly parallel to the surface, without touching, and therefore without warming it.

Striking proof of the facts here set forth is obtained by laying thermometers on the floor of a room with a low fire, and of a room with the fire, as usual of old, at a height of about fifteen or sixteen inches above the hearth. An experiment tried in two such rooms, in both of which thermometers on the piano-fortes, four feet above the floor, stood at 62°, showed the carpet, not far from the hearth, to be at 56° with the low, and at 73° with the high fire.

As would be anticipated by a person understanding the subject aright, low fires make cold feet very common, unless to those who sit near the fire with their feet on the fender; but, deceived by their fallacious reasoning, the advocates are disposed to blame the state of their health or the weather as the cause, and they rejoice at having the low fire, which can quickly warm their feet when placed near it. A company of such persons seen sitting close around their fire, with thankfulness for its warmth near their feet, might suggest the case of a party of good-natured people duped out of their property by a swindler, and afterward gratefully accepting as charity from him a part of their own property."

These suggestions certainly commend themselves to our good judgment, and would lead us to increase rather than diminish the height of our grates, stoves, etc. For aught we can see, the reasoning would lead us to elevate these fixtures to the highest point from which heat would radiate in very sensible quantities to the surrounding floor. Thus the *circle of attraction* to those having cold feet, would be very materially enlarged.

Our readers may remember some statements which we made in our number for April, 1853, in which we explained the mode by which our atmosphere is warmed. The direct rays of the sun in passing through it are very inefficient, while the temperature of the earth has a very important influence. The notion that "heat rises," is not the controlling principle in this matter, but the effect is dependent on other and very different principles, which we need not here repeat. We refer the reader to the article already described.

TURNIPS AS FEED.

While in attendance upon the late National Poultry Show at Barnum's Museum, we spent a few minutes in the "Lecture-Room." Our friend *Mr.* Solon Robinson was making remarks upon the use of turnips as feed, as reported in some of the journals of the day. He took the position that they were good for nothing as nutriment, and sustained himself by giving its analysis. This is all very well, but unfortunately it is not in accordance with well-known facts. We used to talk in the same way, but were obliged to yield not simply to a few doubtful experiments, but to years of experience. This the speaker seemed to feel, for he admitted that "in England it might not be so." But we suppose a turnip in England is very much the same thing as a turnip in New-York. He also added that they should be fed by turning the cattle in upon them, as they are growing in the field. We can not see the force or propriety of this distinction. Is it not the same worthless thing before it is pulled, as afterwards? *Must* the cattle or sheep pull it, or bite it off, to render it nutritious? But even here there is no escape, for the English practice is, after the animal has bit off as much as is practicable, the root remaining in the ground is then lifted by a fork and left on the top of the ground, for the cattle to eat at pleasure.

We are compelled to admit that there is something in this *fact* of nutrition, that no *doctrine* of chemistry or physiology is able to explain. The fact is unquestionable, that turnips are excellent for fattening sheep and cattle, whether we can explain why it is so or not. It is equally true, as *Mr.* R. stated in the same speech, that about 97 per cent of the flat turnip, as shown by a chemical analysis, consists of water. These two facts, so apparently contradictory, are entirely above and beyond contradiction. We subjoin the following, on this subject, which appears in the *Northern Farmer.*

"The vegetable I wish to recommend as the best, all things considered, for milch-cows in winter, is white flat turnips. Some, perhaps, will object to the turnip, because it will affect the taste of the milk and butter. So it does if fed raw; this can be avoided by boiling. For each cow, boil a half a bushel of turnips soft; while hot, add five or six quarts of shorts; which will swell, and you will get the full worth of it. A mess like this fed to a cow once a day, will produce more milk of a good quality, than any other feed at the same cost. Turnips fed in this way do not taint either milk of

butter. One thing in favor of turnips as feed for cows, is, that they can be sown in August, or as late as the first of September. I sowed some as late as September, last year, which were very fine. Turnips are also very profitable feed for pigs, when boiled in the same way as for cows."

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

CONDITION AND PROSPECTS OF MINNESOTA.

I ONCE before mentioned something about threshing-machines. Illinois as yet has furnished the best or most substantial and useful, that have been brought to Minnesota. Elgin, Ill., has the praise of furnishing the best machines as yet. One machine has threshed 12,000 bushels of grain, and the repairs have not amounted to five dollars. As Minnesota will be a great farming country, a great number of machines will be wanted in this country. Spring wheat is worth from $1 to $1.25 per bushel; oats, 40 to 45 cents per bushel.

The crops, on an average, have been good. I hear of no failures of crops, unless by negligence or improper culture. Potatoes have done well, and no sign of rust as yet; and I may say that Minnesota farmers are a happy people. Taxes are light, and a ready market for all that farmers can raise of every description; cash in hand for all; cattle, horses, pork, poultry, butter, etc., in abundance. The bank panic has not affected us much as yet, and we feel confident that Minnesota has managed her affairs so as to stand aloof from the Eastern pressure in financial business.

There is so much good land in Minnesota, and so much of it is cultivated, that systematic farming is little thought of. If a man's farm don't suit him, all he has to do, is to move a few miles off, and find a farm that will suit him better. We turn the sod over in June and July, and the spring following we get from twenty to forty bushels per acre of spring wheat. Corn of most all varieties does better here than in the Eastern States.

Your most obedient, P. PRESCOTT.

Fort Snelling, Min., Jan., 1855.

VALUE OF MANUFACTURES.

WE know of nothing which so forcibly illustrates the importance of encouraging HOME INDUSTRY, as the rise and progress of our manufacturing towns, and among these the history of Lawrence is eminently worthy of attention. We gather the following facts from a carefully-written article in the *Lawrence Sentinel.*

The first town-meeting after the town charter was obtained, was held April 20, 1847. *The whole number of votes for Moderator was six.* The *town* voted to raise $4500 for general expenses, $1200 for roads and bridges, $2000 for schools, and $2000 for building two school-houses.

At the second annual meeting, $18,000 were appropriated for current expenses, $4000 for schools, $30,000 to build a town-house, $12,500 to build a brick school-house, $250 for another school-house, $1500 for Hook and Lad-

der Company; and July 1, $10,000 additional were appropriated for the town-house.

At the third annual meeting, $25,000 were appropriated for the expenses of the town, of which about $8500 were for schools and school-houses.

Thus progress and regard for education go hand in hand. In these matters it is emphatically true that "the liberal soul shall be made fat," while the industry you cherish and protect is not only self-sustaining but is constantly and increasingly aggressive upon all idleness, and ignorance, and the vices that grow therefrom. It is, in many respects, the leaven that pervades the entire mass.

MANUFACTURE OF PLATE-GLASS.

We find in the *Polytechnic* a very concise account of the process employed in the manufacture of plate-glass. We have not yet been able to compete with the English in this department, on account of the great expense with which it is attended, and the necessity of great skill, which it requires. Without occupying space now, with its history, we copy the account given of its present condition. The American invention, spoken of at the close of the extract, is by the learned editor of the journal from which we copy.

"The best plate-glass now manufactured comes from St. Gobain, in France, where the manufacture of cast plates was first established in 1689; the English plate is next in quality; the German being liable to cloud; the excellence of the plates of St. Gobain is due, it is said, to the fact that it is a true chemical compound, consisting of one atom of trisilicate of soda, and one atom of trisilicate of lime, with a small per-centage of alumina; this manufacture is a very good example of the advantage of employing the best chemical talent in a manufacture where chemical compounds are used. The services of Gay Lussac were engaged for a long time at these works, where his investigations were in the highest degree valuable.

The manufacture of plate-glass, as at present conducted, requires a number of workmen, and the greatest care, after the vitrification of the materials is complete, which takes ordinarily about twenty hours. The glass is transferred from the pots in which it is made to a *cistern*, or as the French call it, *cuvette*, made oblong, and so formed as to be readily transported. This cistern is highly heated in a furnace, and the glass is ladled from the melting-pot into it, and then stands till it is fined, and at a proper heat to work. When the melted glass in the cistern is in the proper state for flowing readily and equably, the cistern is taken out of the furnace by means of tongs, which are made to embrace the cistern. It is then raised by a crane, placed upon a low carriage, and removed to the casting-table. The outside of the cistern is carefully cleaned, and the glass skimmed with a broad copper sabre, to prevent any impurities from mixing with the glass on the casting-table. The cistern is then wound up to a sufficient height by means of a crane, and swung over the upper end of the casting-table, which has been heated by hot coals spread over it, and then wiped perfectly clean. The cistern being tilted over, a torrent of melted glass is suddenly poured out on the surface of the table: it is prevented from running off the sides by ribs of metal, one of which is placed along the whole length of each side, their depth being the exact measure which is to be given to the thickness of the glass. When the cistern has been emptied, a massive copper cylinder, three feet in diameter, extend

ing entirely across the table, and resting on the side-ribs, is set in motion, and spreads the glass out into a sheet of uniform breadth and thickness. The pouring out of the glass is a grand sight, and the variety of colors exhibited by the plate, immediately after the roller has passed over it, is beautiful to behold. In order to remove all impurity from the casting slab, a washer is drawn immediately in front of the fluid glass; the excess of glass pours over the front edge into a trough, filled with water; the roller then passes off the slab, and is received in grooves in front of the slab. The slab is then cleared of any redundancy at the sides; a thick flange of the still soft glass is turned up at the end; and when this flange has become somewhat rigid, a rake-shaped iron is applied to it, and the plate is forced forward into the annealing oven, or thrust upon a wooden platform moving on wheels, and so conveyed to the oven, where it remains about five days, in a horizontal position, exposed to a gradually diminishing temperature.

Grinding and Polishing.—The plate being still hot, and yielding when it is slid into the oven, takes an impression of the bricks of the oven upon which it rests, while the upper surface is generally made smooth and bright from the action of the fire, but it is not flat. The plates, as they come out of the annealing furnace, are about half an inch thick, of an irregular mottled appearance. They are carefully examined, to see whether the glass is sufficiently free from defects to admit of forming large plates, which, of course, have a much greater comparative value than small ones. If the defects are such as can not be removed by grinding, the plate must be cut up into smaller plates, so that the defective portions may be rejected. The plates having been squared, next undergo the processes of grinding and polishing. These were formerly done by hand, but of late years this laborious work is almost entirely performed by machinery. The first object is to produce a level surface, which is done by grinding one plate upon another, a rough or rolled surface being opposed to the comparatively smooth or casting-plate surface. The grinding machines for large plates are arranged in pairs, consisting of two benches of stone, fifteen feet long, eight feet wide, and eighteen inches high. On the surface of each bench, one or more plates of glass are imbedded in plaster of Paris, close together, and quite level. Other plates of glass are cemented upon the lower faces of two swing-tables or runners, which are made to traverse over the fixed beds by appropriate machinery, in such a way that each runner is made to rotate around its own axis, and by a combination of two movements to change continually the relative position of the fixed bench and runner. Such an arrangement tends to the mutual correction of the two surfaces of the glass, and greatly assists the equal distribution of the sand and water. All the irregularities of the surface are first ground out with sharp river-sand, which has been washed and sifted into three sizes: the sand and water are thrown on by hand from time to time. When the plates have been ground quite flat, the finer sand is employed; this is followed by one finer still, which removes the scratches made by the coarser. The plates of glass are well washed between every change of sand; and when one side has been ground, the plates are reversed, and the other side ground.

When the plates become sufficiently smooth to require the application of emery, there is a tendency to cohesion between the surfaces, which, travelling over each other with moderate velocity, produce so much friction that one surface will frequently tear the glass from the other. Hence it has not been thought safe to trust the next process, namely, the *smoothing*, to machinery, and hand-labor has been employed.

The polishing is completed by rubbers, covered with thick felt, and worked

by machinery. The plates of glass are embedded close together, with their surfaces quite level, upon movable platforms, fixed upon a traversing bed. The rubbers, which measure eight by six inches each, are attached, one foot asunder, to reciprocating carriages, which drag the rubbers backward and forward over the surface of the glass, while the latter traverses, beneath the rubbers, a space equal to the distance between the two lines of rubbers, so as to expose all parts of the glass equally to their action. Each rubber is made to exert a pressure of about fifteen pounds, by means of lead weights. The powder used for polishing is Venetian pink; this contains only a small portion of the oxide of iron mixed with earthy matter; it admits of being mixed with water, and thus reduces the friction, and prevents the glass becoming heated by the action of the rubbers. Tripoli irocces, or putty-powder, used with water, are too active to produce a high polish on glass; but they may be employed dry for the last finish in hand-polishing. In polishing by machinery, dry powders must be avoided on account of the friction and heat evolved. Hand-polishing is very tedious, and is apt to produce a wavy appearance; hence, machine-polished glass is to be preferred.

The grinding and polishing of the glass reduce their thickness as much as one third, and in some cases one half. Should the glass be defective, the polishing will only serve to heighten the defects; hence, a second and more careful examination and selection are now made. The defective ones are cut up into smaller plates, and these are polished again; the perfect ones are reserved for silvering."

"A machine for making plate-glass has been invented by J. J. Greenough, and patented a short time since, which does away with almost all the manipulations formerly required; by it glass of any required magnitude can be made, and at a cost very greatly reduced from the old method; it consists in taking the glass from the *cistern* or *cuvette* directly between two rollers, by which it is drawn out into the form of a slab; descending perpendicularly, it is again reduced to a thinner plate by a pair of rollers placed below the first and made to draw sufficiently for the purpose; it then passes downward to a third pair of rollers, and thence to any number found necessary, the sets of rollers being sufficient in number to sustain and draw the glass, and hold it till it gets sufficiently cool to sustain its own weight, when it descends into an annealing oven below, where it is suspended till cool. By this means the two sides of the plate are perfectly straight and parallel, requiring but little polishing to prepare them for mirror plates, or other like purposes. It will be seen that great rapidity of execution can be attained with this method; the quickest working glass, such as could not be used in the ordinary way, may by this means be wrought at a very low cost. The rollers are kept cool by a stream of cold water running through them to carry off the superfluous heat, and the temperature of the glass is thereby rapidly reduced to the proper point for annealing.

There are many minor details in the manufacture which we have here not enumerated; but sufficient has been shown to demonstrate a greatly reduced cost over the old method of making plate-glass, which it must eventually supersede."

Cashmere Goats.—A pair of pure-bred Cashmere goats were recently bought by some gentlemen in Richmond, Va., for fifteen hundred dollars. The wool from another pair of the same lot, when examined by a microscope, compared precisely in fineness with the hair of a $2700 Cashmere shawl.

NEW GAS STOVE.

A NEW method of obtaining heat from gas has been invented by Mr. Shaw, of Boston.

The stove consists of three upright iron cylinders, the middle one being about one half larger than the other two. Above these is another cylinder of radiation, which shows the amount of gas consumed. The engraving is a small representation of its general appearance.

One of our exchanges says:

"Although very diminutive in size, it heats a room, in ten minutes, warm enough for all practical purposes, when the flame can be reduced and an even temperature maintained. When in full blast, it consumes about four cents' worth of gas per hour; but after the room is heated, one cent's worth of gas per hour will amply suffice. It is easily managed; indeed, there is nothing complicated about it, and a servant who has sense enough not to attempt to blow a gas-light out, can safely be intrusted with its care. The heat it produces is not a dry heat, but of an agreeable moisture, partly produced by the usual pan of water, which should be attached to every stove, while the flame, burning through asbestos, resembles so closely hot coals that the difference is scarcely perceptible." The following letter from Professor Hayes, who has inspected and tested the stove, and who is very high authority in such matters, is quite explicit:

'The present invention is based upon the principle of burning a mixture of illuminating gas *with* air, so as to develop the largest amount of heat which the gas can afford.

Ordinary burners consume a current of gas *in* air, thereby producing light and an ascending current, by which the heat generated is carried upward and dispersed.

The iron structure, or stove, serves as an absorbent of the heat generated by the perfect combustion of the mixture of gas and air. It then presents a large heated surface, which warms the air in contact with it by conduction, and also in a high degree all bodies near it, by radiation.

No danger exists in this mode of combustion; the utmost amount of explosion attending it is that which we observe, when we light gas, at the top of a tall burner-chimney.

The products arising from the combustion are vapor of water, carbonic acid, and nitrogen gas, and the amount or volume of these bodies is the same as that produced from an equal number of gas-burners as arranged for affording light.

It is a feature of economy shown in carrying out the application of the principle, that has led the inventor to so arrange the parts that the heat produced is retained as long as possible *low down* in the space to be warmed. The second or upper radiator has been added for this purpose, and it also serves as an indicator of the *amount of gas* which should at any time be consumed for warming the air of an apartment.

If after the first hour of the combustion the temperature of the exit-pipe becomes higher than that of the hand, a portion of the gas may be shut off, and when the air of the room has become warmed, a small volume of gas will maintain that temperature.

I think the inventor has shown much judgment and skill in adapting the parts to the scientific principle, and that his gas-stoves, without ventilation for *open* rooms, and with ventilation for *close* rooms will prove a great addition to our means of comfort and convenience.

Respectfully,

(Signed) A. A. HAYES, M.D.
Assayer to the State of Massachusetts.'

11 *Boylston street, 22d Nov.*, 1854.

In a library, where dust is so injurious to books, its value is inestimable. In the Merchants' Exchange, Boston, Mr. Shaw has placed one of the largest size, which contains eight jets, and gives satisfaction. To warm the room, it requires that they all be lighted for the first half hour, after which four may be shut off."

CAST-IRON HOUSES.—A most ingenious and practically useful application of cast-iron has just been introduced by Mr. Chaplin, engineer and iron-house builder, Glasgow, giving the material a wide scope in an extremely novel direction. It consists in the adoption of cast-iron for house-building purposes, in such a manner as to produce a close resemblance to stone. To this end, the metal is cast in rectangular blocks, with back-flanges and strengthening ribs, for bolting together into a solid mass, each separate detail being made in the shape of ashlar-hewn stone, or brick. The pieces may obviously be of any convenient size and shape, all, when erected, running in level courses, and each numbered, in correspondence with its size and special form. In this way a solid cast-iron mass is easily erected, the numbering system very much facilitating the ordering and putting together of the pieces; and, if desired, a single plate may be made to resemble two or more stones, by being suitably marked. An internal air-space, or non-conducting section, may also be formed by an inner lining of wood, or lath and plaster; and the chimneys and flues may be carried along in this space, as in stone or brick erections. By this system an entire house, of large size may be erected with very few, perhaps four or five, varieties of sizes and shapes of cast-iron pieces, or factitious stones. No lintels are necessary for the windows and doors, as, by bolting together the flanges of the pieces, due support can be given, without involving the use of long pieces. A double shop, with an overhead dwelling, recently erected by the patentee, exhibits the value of the plan in a most favorable light. The roof, which is of arched corrugated iron plates, is concealed by the projecting eaves; and whilst the entire front is severe and plain ashlar imitation, sufficient relief is given by the separate attachment of light ornamental beads or mouldings—one at the top of the first course above the windows, and one for the roof-gutter. The roof-gutter is fastened on outside the wall face, and the edge of the roof is brought over the wall, so that no dripping from leakage can find its way to the interior of the house. Either new or old stone and brick buildings may be faced with thin plates of this "imitation ashlar," which is obviously more enduring, and less liable to injury, than the best sandstone or cement; whilst the material admits of the most elaborate ornamentation at a comparatively small cost.

THE LOWELL WIRE FENCE ILLUSTRATED.

In our January number, we chronicled the invention, by John Nesmith, Esq., of Lowell, Mass., of a machine for manufacturing wire-fence, and spoke of the admirable adaptiveness of this mode of fencing to farms, gardens, roads, railroads, canals, trellis-work, etc. We are now happy to present our readers with some cuts illustrative of this novel and excellent fencing.

Fig. 1.

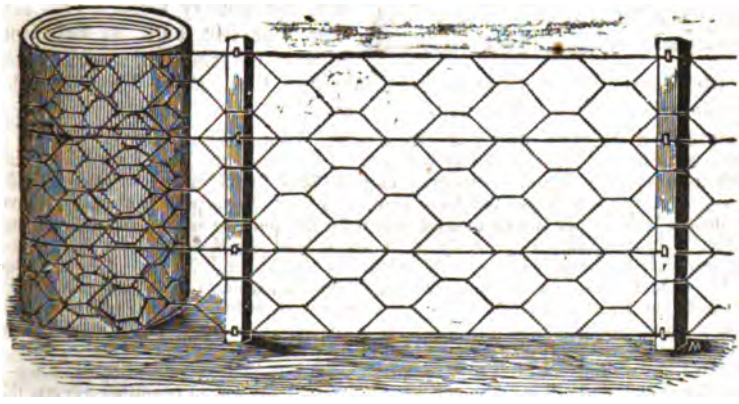

Fig. 1 represents the strongest kind of this fencing, four feet high; the mesh or squares six inches; the straight or lateral wires of No. 10 wire; the body of the fence of No. 12 wire, (or it may be of No. 15 wire;) varnished with asphaltum blacking, (or it may be coated with coal tar, or painted, or galvanized,) for beauty and preservation. If re-varnished once in five or six years, this fence will last a century or more, while the most durable post-and-rail fence lasts but about thirty years. The price of this mode of fence is from 75 cents to $1.10 per rod, according to the weight of the wire.

Fig. 2.

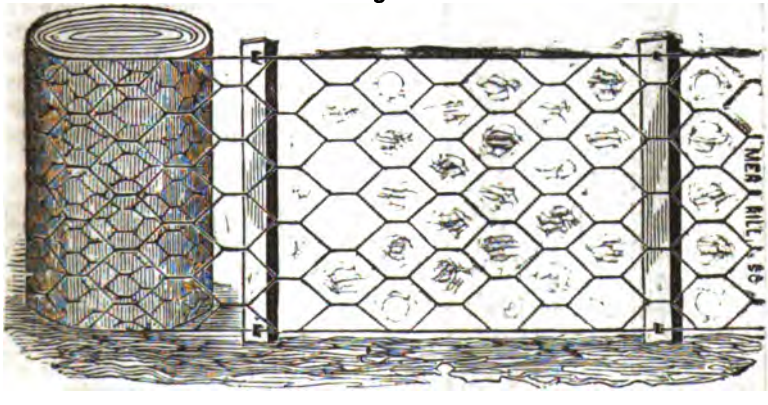

Fig. 2.—This netting is of the same height as the former, with wire and

mesh of the same sizes, but without the two lateral wires through the middle of the fence. This varies in price from 60 to 95 cents per rod. Both these make first-rate cattle fences.

Fig. 3.

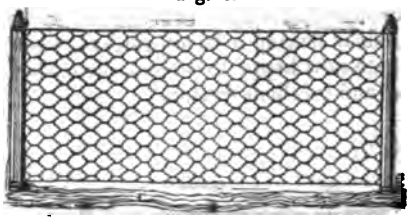

Fig. 3 represents a different kind of this netting, from sixteen inches to four feet high, with mesh of three inches. The outside wires are of No. 10 wire; the inside of No. 15; the price from 75 cents to $1.50 per rod. It is a capital sheep, garden, and poultry fence. This netting, four feet high, is sufficient, without covering, to "hold" hens. All who have tried it attest its practicability. RICHARD S. FAY, Esq., the popular agricultural lecturer, writes of it as follows:

"CHARLES COWLEY, Esq., AGENT OF THE LOWELL WIRE FENCE CO.:

SIR: Your favor of Jan. 2d is duly received. I have used the Lowell wire fence during the past summer, for folding sheep at night on land that I wished to manure, shifting once or more every week, and have found it answer the purpose perfectly. I have also inclosed an acre or two of ground with it for the purpose of keeping a few sheep separate from the flock. If properly set, it would hold any thing, and for smaller animals, particularly sheep, it is impossible that they should break it down or escape from it. I have had some iron rods made with a double foot, which I drive into the ground and attach the fence to it either by copper wire or stout twine. A man and a boy will inclose a quarter of an acre in less than an hour, having these posts, which should be set not more than a rod apart.

When I change the fence to a new spot, I unfasten it from the posts—throw it down—begin at one end, and roll it up as you would a carpet. And so in re-setting, reverse the process, rolling it out where it is to be set; drive down the posts, and then raise it and attach it to them. My fence cost $1.50 per rod, and it is a cheap mode of hurdling or inclosing at that price. I understand now that it is made much cheaper.

I am very truly yours,

RICHARD S. FAY.

Boston, Jan. 5, 1855."

Fig. 47.

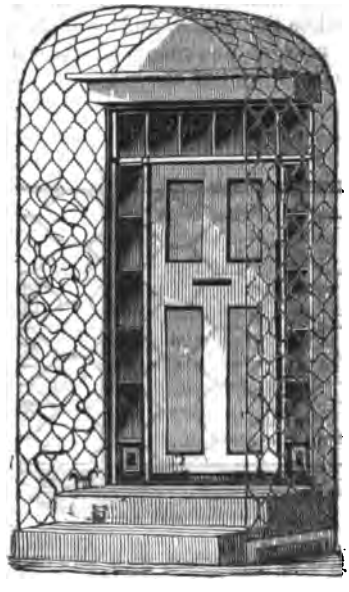

Fig. 47 represents the front door of a house, arched with some of this netting as a mode of trellis-work. It may be had of any width, from sixteen inches to four feet, and of any mesh, one, three, or six inches. Light, cheap, elegant, and durable, this is the most admirable trellis-work yet devised. Hon. MARSHALL P. WILDER, of Dorchester, Mass., President of the United States Agricultural Society, who has recently procured some of the four-feet-wide, six-inch mesh netting for grape trellises, writes as follows:

"CHARLES COWLEY, Esq., AGENT, ETC.:

DEAR SIR: I have recently examined some of the netting of the Lowell Wire Fence Company, for fences, trellises, etc. From my own experience and that of others, I can not doubt that it is perfectly practicable as a fence for fields and gardens, or that it is well adapted to all uses where a strong, close, elegant, economical, and durable fence is required. Where stone is not abundant, or where lumber is expensive, as in many of our States, I should deem it the most practicable fence that could be procured. If our railroads are hereafter to be inclosed, as

safety and economy demand, they can scarcely be fenced cheaper or better than by this mode of fence. The stouter kinds of this netting are of such strength, that cattle could not easily penetrate or pass it; while the closeness of the lighter kinds renders them admirably available for garden uses, heneries, and poultry fences. Fencing like this has for some years been extensively used in Great Britain; and, since it can now be made at a much less cost, by machinery, it would seem to be equally adaptive to the United States. I know of no fencing so good as this, that can be procured for $1.50 per rod, the highest price asked for the most costly kinds of this netting; and this is, probably, the only fencing of equal merit that can be bought for $1.50 per rod.

As a material for rose-trellises, grape-trellises, and ornamental work in gardens, I think it unequalled in cheapness, durability, and beauty, by any thing yet devised. It will, without doubt, eventually be received into general use, when its merits are appreciated by the public. Yours respectfully, MARSHALL P. WILDER.

Dorchester, Jan. 15, 1855."

Besides the kinds of this netting represented in these cuts, there are other kinds—one of one-inch mesh, which is fast coming into use for window-netting, bird-cages, etc., etc.

The enormous expense of constructing and repairing stone walls, post-and-rail fences, and other modes of fence now in vogue, is such that many do not hesitate to attribute to it the present backward state of American agriculture. The well-known Mr. BIDDLE, some years ago estimated that the fences of Pennsylvania alone cost $100,000,000, and the annual expenditure upon them not less than $10,000,000. In all the other States, the "*fence-oppression*," as it has been called, weighs no less heavily than in Pennsylvania. In view of such facts, we regard the introduction of the fencing above portrayed as a blessing to all the farmers in the country. That it will, in a great measure, supersede all our present modes of fencing, is an opinion concurred in by its inventor, by the Company organized to manufacture it, and by all, whether practical agriculturists or scientific theorists, who have tried or examined it.

AMERICAN SOLIDIFIED MILK.—Mr. Blatchford has established a factory for the purpose of carrying on this process at Armenia, N. Y. There the following treatment is adopted: To 112 lbs. of milk, 28 lbs. of Stuart's white sugar are added, and a trivial proportion of bicarbonate of soda—a teaspoonful, merely enough to insure the neutralizing of any acidity, which in the summer season is exhibited even a few minutes after milking. The sweet milk is poured into evaporating pans of enamelled iron, embedded in warm water heated by steam. To facilitate the evaporation by means of blowers and other ingenious apparatus, a current of air is established between the covers of the pans and the solidifying milk. Connected with the steam-engine is an arrangement for stirrers, for agitating the milk slightly whilst evaporating, and so gently as not to churn it. In about three hours the milk and sugar assume a pasty consistency. By constant manipulating and warming, it is reduced to a rich creamy-looking powder; then exposed to the air to cool, weighed into parcels of a pound each, and by a press, with the force of a ton or two, it is made to assume the compact form of a tablet, (the size of a small brick,) in which shape, covered with tinfoil, it is presented to the public. On a recent examination of the routine, some of the solidified milk which had been grated and dissolved in water the evening previous, was found covered with a rich cream. This skimmed off, was soon convered into excellent butter. Another solution was speedily converted into wine-whey, by a treatment precisely similar to that employed in using ordinary milk.

BLOOMFIELD'S CYLINDRICAL STEAM VALVE.

The annexed engravings represent a new valve for engines, invented by Hosmer Bloomfield, of Springville, N. Y.

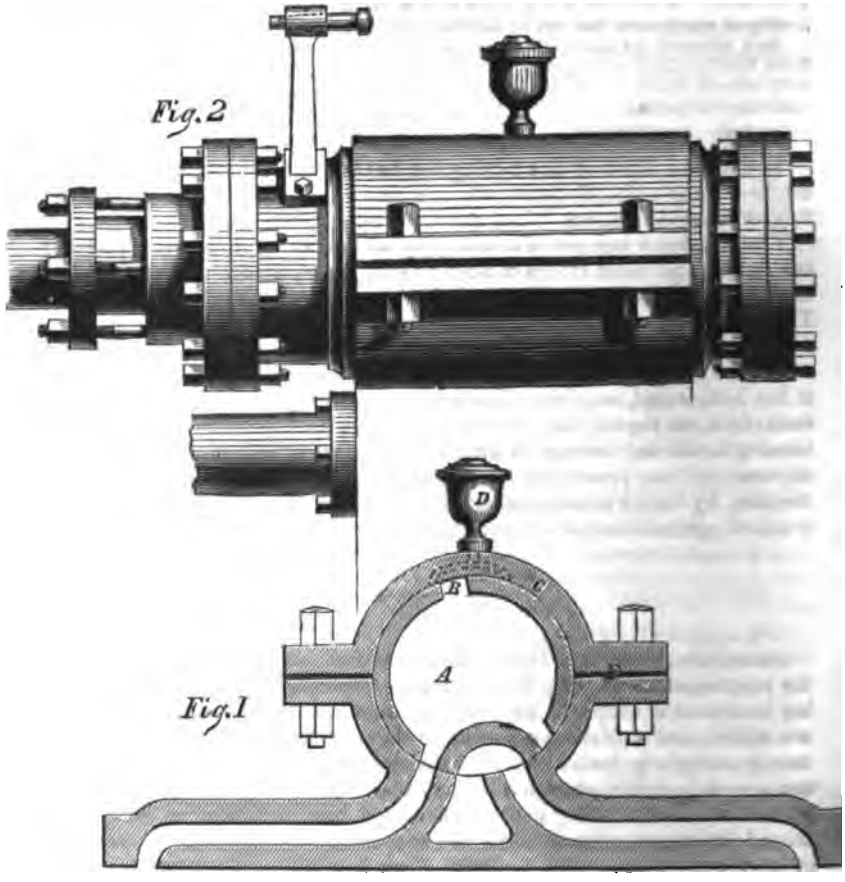

Fig. 2 is a side elevation of the valve, with the inlet pipe attached, and the crank-pin, for oscillating the valve. Fig. 1 is a transverse vertical section of the valve and the steam passages of the cylinder of an engine. A represents the cylindrical valve, which forms a steam-box, with head and bottom like a cylinder. This valve extends to the outside of the valve-cover, C, and is oscillated by the eccentric rod, which is attached to the pin of the arm shown in Fig. 1. B is an opening in the roof of the valve, to counteract the abutting force of the steam on the cylinder face. D is an oil-cup, and there are channels cut in the valve to allow its whole surface to be lubricated. E is a layer of vulcanized india-rubber packing, to render the cover, C, steam-tight. In Fig. 1 the steam is exhausting from the steam-cylinder at the right-hand end, and the engine is taking in steam by the left-hand port and

passage. This figure is taken through the length of the steam-cylinder, and is consequently at right angles to Fig. 2, which shows the exhaust-pipe on the steam-cylinder under the top inlet steam-pipe. The advantages claimed for it by its author are: 1st, perfect freedom from unequal steam-pressure; 2d, accessibility of all its parts to lubrication; 3d, simplicity; 4th, even wear of surface after it is ground in steam-tight.

More information respecting it may be obtained by letter addressed to Mr. Bloomfield, at Springville.

MISCELLANEOUS.

EMBOSSING TELEGRAPH.—Mr. E. S. Barnes, of South-Camden, N. J., professes to have made certain discoveries which enable him to improve vastly upon the present system of printing-telegraphs. He calls his invention the "Embossing Telegraph," and sets forth in a circular the principal advantages over other methods. Some of these are as follows:

The difficulties from atmospheric electricity are entirely removed, by a process which needs to be seen to be properly understood. Suffice it here to say, that however great the volume that may be discharged into the office, there is a contrivance, no more complicated than a simple vessel of acidulated water, to arrest and dissipate nearly, if not quite all the charge; and any that may pass, will not disturb the equilibrium of the magnet, at most, more than momentarily, owing to a combination of a permanent with an electro magnet, the former of which will not be inductively affected by any amount of water that can pass the vessel of acidulated water. And now to produce the Roman letter, by a process combining simplicity of mechanical construction, strength of operation, and ease of acquirement by any operator of ordinary capacity. This I have done. But to set forth how, would be to give a detailed description of the instrument, which is not here my intention. I will endeavor to make it perfectly clear to any one who will be pleased to witness the operation, at Camden, New-Jersey. There is another feature of great advantage in this instrument—the "circuit-breaker," at the terminating station, and the type-wheel, at the receiving station or stations, return to a given starting-point at the completion of each letter, the instrument thereby adjusting itself at every letter, and this without loss of time.

"Mr. Barnes," says the *Louisville Journal*, "resided here for a considerable time a few years ago, and is well remembered by many of our citizens. He gave much attention to the subject of electro-telegraphs, and, by those who knew him well, he was considered a great inventor. We have a strong hope that his Embossing Telegraph will accomplish all that is expected of it.

EMPLOYMENT FOR THE POOR.—We cheerfully give place to the following by request of Mr. De Motte. The object is obvious to the reader. It was originally addressed to the editor of the *Sun*:

The Address of the American and Foreign Emigrant Protective and Employment Society, which you kindly gave a place in your columns, has already produced its anticipated fruits. Numerous letters have been received within the last few days at the Society's office, requesting that portions of the surplus labor of our city may be removed to the neighborhood of the writers. These letters are on file, and open to the inspection of any disposed to examine them. The Board of Managers have to deplore an exhausted treasury.

One thousand dollars, placed in their hands, could be at once advantageously employed to defray the travelling expenses of suitable persons, desirous of obtaining employment, to the locations where their labor is desired and needed. It would undoubtedly be the best investment of charitable funds that could be made. In all cases the beneficiaries are required to refund the amount thus advanced out of their future earnings, and their employers are engaged to see that this is done. This very day a respectable American mechanic—a wheelwright—applied to the Society for aid to remove himself and family to the country, where employment and a home awaited him, but the boon could not be granted him.

The Managers take this opportunity of inviting the friends of humanity in the country to aid in this work of benevolence. The support of the destitute poor now in the city of New-York, who can not be removed, is taxing to the utmost the charity of the citizens. Let those communities where labor is wanted form Associations, collect funds and remit them to the Society, and the pledge will be given that, if not restricted to country or creed, careful selections will be made of moral and industrious persons to fill the stations to which they may be invited. A good opening is offered to those wanting employment who have means sufficient for their removal, of doing so, as in removing under the auspices of the Society, care will be taken to prevent imposition or disappointment, and every facility and information will be extended to each. MORTIMER DE MOTTE, *Cor. Sec.*

New-York, Jan. 12.

SLAG AS A MATERIAL FOR FICTILE PURPOSES.—Some time ago, Mr. Elliott, of Blisworth, made a very satisfactory attempt to establish the manufacture of bricks and tiles from the slag, or refuse cinder, of blast furnaces. Now, we have a further movement towards a similar end, at the hands of Dr. Smith, of Philadelphia, who, with a staff of chemical assistants, is at present engaged in the matter at Merthyr. His experiments have been made with the view of producing bottles, and domestic utensils of various kinds, as well as tiles and paving-flags; and this mode of converting the enormously-accumulating cinder of the iron works has been decidedly successful. The new bottles are tougher and more perfect in their annealment, than any of the ordinary glass kind; but they are undistinguishable from glass ones in external appearance. Lady Charlotte Guest has adopted the process, and it is believed that not much time will elapse before the transmutation of what has hitherto been a constantly-increasing waste mass, will be a commercially-valuable fact.

TO GIVE A DULL BLACK COLOR TO BRASS.—A dull black color, such as is frequently employed for optical instruments, may be given to brass by first carefully rubbing the object with tripoli, then washing it with a very dilute solution of a mixture of one part of neutral nitrate of tin and two parts of chloride of gold, and then wiping off the excess of liquid, after the lapse of ten minutes, with a wet cloth. If there has been no excess of acid, the surface of the metal will have assumed a dull black color. The neutral nitrate of tin may be prepared by decomposing the perchloride with ammonia, and dissolving the precipitated oxide thus obtained in nitric acid.

LOCOMOTION BY MEANS OF A VACUUM AND COMPRESSED AIR.—Mr. Sommeiller, a Sardinian engineer, and director of the railway works of Turin, has invented an ingenious aparatus, which he has patented in France and several countries abroad, for the utilizing of natural waterfalls for the purpose of

compressing air into suitable receivers, or for producing a vacuum in such receivers, and applying the same to locomotive purposes. The Sardinian Government has just made a grant of 80,000 livres, for the purpose of experimenting upon the invention, which will probably be applied to the ascent of Mount Cenis and the Col de Tende.

Portable Screwing Tackle.—This form of screwing-tackle possesses the valuable feature of extreme portability. It is intended more especially for gas and water-pipe fitters, or for other artisans whose avocations require the carrying about of screwing apparatus to scattered jobs. The die-frame is of cast-iron, with two diametrically-opposite bosses cast upon it, which are bored up sufficiently far to receive the two wrought-iron handles. The boss-holes are made with a slight taper, so that a tap will fasten the handles in their places, whilst they can be at once knocked out when required. When both handles are unshipped, the stock will go into a very small compass, so as to be easily packed in an ordinary tool-basket or box.

Polished Shirt-Bosoms.—We have often endeavored to learn how this work is done, but have met with little success. We are now able to give the following as a process in use in some laundries:

To a quarter pound of starch add white spermacetti of the size of a walnut, or say, half an ounce; boil these together from one to three hours.

In ironing, when the flat is hot, rub the face of it rapidly with a piece of white wax, taking care not to suffer it to adhere too freely; and this gives a smoothness to its surface which is serviceable in heightening the polish of the linen.

Since the above was written, we have seen the following in an exchange:

"We often hear ladies expressing a wish to know by what process the gloss on new linens, shirt-bosoms, etc., is produced, and in order to gratify them, we subjoin the following recipe:

"Take two ounces of fine white gum arabic powder—put it in a pitcher, and pour on a pint or more of boiling water, according to the degree of strength you desire—and then, having covered it, let it stand all night. In the morning pour it carefully from the dregs into a clean bottle, cork it, and keep it for use. A table-spoonful of gum-water stirred into a pint of starch made in the usual manner, will give lawn, either white or printed, a look of newness, when nothing else can restore them after they have been washed.

The Water-Power, Etc., Potomac.—We have received a pamphlet and extensive maps, describing the water-power at the Great Falls and town of Potomac, owned by the Great Falls Manufacturing Company, and intended to give a particular account of it. But the pamphlet was mislaid, and hence forgotten till our pages were full. We shall publish it in our next number. Meanwhile, we merely remark that here are the means, if properly used, for one of the largest and safest manufacturing establishments in the United States.

Northen Farmer—Caution.—The editor of *The Northern Farmer* recently complained of some of his contemporaries for not giving credit for borrowed articles. But in his January number he has published an entire article entitled, "Raising Forest-Trees," which we prepared for our own journal, without any intimation that it is not editorial in his pages. This example is not commendable.

Iron Trade, Yorkshire.—Since the recent discovery of iron-ore in the Cleveland Hills, in the North Riding, the trade has made rapid progress.

Eighteen firms have established themselves in the districts of the Tyne and Tees, who will shortly have eighty-five furnaces in blast, producing 500,000 tons of iron per annum. Several of these are already at work; others are building. Sites for 300 houses, with a church, market-place, and other public structures, have been laid out near Stockton, and the whole will be completed in two years. The new town will bear the name of North-Ormsby, and this makes the second town erected since the discovery of ore.

Manufacture of Iron and Steel.—A Frenchman has been attempting to instruct the Americans in the application of wood to the manufacture of iron and steel. Wood can not be employed without previous preparation, on account of the quantity of water it contains; and he calls attention to the methods which have been employed, for a short time, in Styria and Carinthia, for driving off the water by heat, but stopping the distillation as soon as the substances which escape begin to contain carbon. One method is this: The gases coming from the fire-place are brought into immediate contact with the wood, which is thereby raised to a temperature sufficiently high to yield its moisture to them. In the second method, the gases are not brought into contact with the wood, but are conducted through iron pipes, around which the wood is piled. This is the more economical process, and does not render the wood liable to spontaneous combustion, as the first is apt to do. The carbonaceous residue is then applied to the puddling process, in which the quantity of air introduced into the furnace is regulated, so that no more is admitted than is required. Under the old system it was found that mineral combustibles were much better adapted than wood to the operations of the puddling furnace; they produced a more regular current of gas, and the interstices between the pieces of wood permitted too much air to pass. But now the dried wood and the current of air, by which ignition is supported, are admitted separately into the laboratory, and hence the fire-place must have quite different dimensions. It is very long vertically; the grate is very low, and composed only of a few bars to support the wood. The air does not enter freely into the fire-place; the bellows sends a graduated current of air under the wood, and produces its distillation. On account of the pile which the air is obliged to traverse, the distillation is gradual. The air admitted is in proportion to the quantity of wood required to be carbonized in a given time. The current of combustible gas found in the wood passes into the laboratory, where the puddling takes place, and is met by a regulated current of air driven through a pipe. The laboratory thus obtains, instead of an ordinary flame, a combustible gas, free from all traces of oxygen. It is asserted that, by this process, the purification of the iron takes place under very favorable circumstances, and that even impure kinds yield excellent metal.

Coal Trade.—In the year 1853, 8,835,573 tons of coal, 40,142 tons of cinders, and 195,269 tons of culm, in all 9,070,984 tons, were shipped at the several ports of the United Kingdom, coastways, to other ports of the United Kingdom. In the same year, 3,758,123 tons of coal, to the declared value of £1,507,950, and 176,939 tons of cinders, to the declared value of £96,641, were exported from the several ports of the United Kingdom to foreign countries, and to British settlements abroad. 4,026,985 tons of coal were brought into the port of London during the year, of which 3,373,256 were brought coastways, and 653,729 by inland navigation and land carriage. The export of coals to Russia during the year 1853 amounted to 212,762 tons, the declared value of which was £78,559. We glean this information from a parliamentary paper.

"ANASTATIC PRINTING," now a comparatively antique invention, is a peculiar process, by which any design made on paper with prepared ink, chalk, or other oleaginous matter, may be transferred from the paper to a metal plate, which plate, in turn, may be used as the actual printing surface for the production of an indefinite number of copies of the original design.

The discovery of this interesting art occurred at Erfurt, in Germany, some years ago; but its introduction here is mainly due to Professor Faraday, who gave an elaborate lecture on the subject, at the Royal Institution, in 1845. The term "anastatic" has been deduced from the Greek, (*ἀνάστασις, resurrection*, or *reproduction.*) The plan is simply this: The printed original, or the paper carrying the oleaginous device, however produced, is laid face downwards, upon a clean zinc plate, and an acidulous solution is then applied to the back of the paper, when the whole is passed through a press. The presence of the oleaginous lines in contact with the plate, prevents the acid from taking effect at those parts, whilst the blank spaces, being quite unprotected, are fully and completely acted upon, or "bitten" in by the acid. We have thus a reversed *fac-simile* of the original device, the lines of such figure or letters being in relief. On the removal of the paper, the plate is treated with a gummy solution to prevent the adhesion of the printing-ink upon the blank spaces, and the plate is then inked upon by rollers, and printed from—just as a form of types would be used.

In some instances, very old letter-press and drawings have been most perfectly re-produced in this way; but, in the majority of cases, the complicated and uncertain chemical arrangements necessary for reviving the hard and dry ink of old subjects, have been a complete bar to the application of the new process to this purpose. Hence, Mr. Cowell, with other printers, has been led to adapt the art to purposes of more general utility.

NEW METHOD OF TREATING GUTTA PERCHA.—A new mode of treating gutta percha, with the view of applying it to various new purposes, has been lately patented in France. To render it liquid, a carburet of hydrogen, obtained in the following manner, is made use of: Take of the light oils from the distillation of coal tar, (spec. grav. 20° to 30°,) and wash it well several times, adding, the first time, a little sulphuric acid, for the purpose of removing matters injurious to the production of the carburet. The acid can be removed by repeated washings with water, after which the oil must be distilled. To the distilled oil some lime in powder and sulphuret of carbon must be added, and it is then subjected to a second distillation. A liquid, indicating 28 or 30 degrees on the hydrometer, passes over. By means of this, gutta percha may be liquefied, applied either cold or hot, the latter being best. By adding a little alcohol to the carburet thus obtained, a liquid is obtained of 32° or 33°, which will take away spots of grease from all kinds of textile fabrics, even from silk, without altering the color, and it may be used for cleansing gloves. Its unpleasant smell can be removed by adding a little essence of lavender. An important application of the liquefied gutta percha is for printing rollers, which are usually made of gelatine, or glue and molasses mixed in different proportions, according to the temperature and the season. If to these matters a small portion of liquefied gutta percha is added, a very superior kind of roller is obtained. Liquefied gutta percha, mixed with gum copal, dissolved in the carburet above described, produces an excellent varnish for wood and metals, and applied to iron it prevents its oxydiza-

tion. All sorts of fabrics can be rendered water-proof by a single coating of liquefied gutta percha. When intended to be used in a solid state, the gutta percha should be well kneaded in a heated mortar, and then pulverized coloring matter is added. It is then kneaded again, in order to make the coloring enter into every part of the mass. It is then passed between rollers. Thus prepared, it resists from 140° to 160° Fahr. of heat. It is made use of in the manufacture of all kinds of objects of art or industry, such as pipes, boxes, vases, statuettes, casts, etc.

Preserving Meat and Fruit.—The French have been experimenting upon this subject, and it is reported that a mode of preserving meat and fruit has been discovered, by which they are not altered in size or appearance, so that at the end of six or eight months, when placed on the table, they would be taken to be perfectly fresh. What is still more strange, the articles have lost none of their original flavor. If all this is true, the discovery is a very valuable one. MM. Delabarre and Bonnet have submitted to the French Minister of War some samples of meat preserved by their method. This consists in drying it by natural means, and then preparing it with materials furnished by the animal. When the water which composes a large part of fresh meat is driven off, the osmazome supplied by the animal is applied as a varnish to the increase of the nutritious properties of the meat. By desiccation the meat is reduced in size and weight one half, and this is done without the application of artificial heat. It may be eaten in this state, and is not disagreeable. When cooked, half an hour's immersion in hot water is sufficient to increase its bulk to what it was originally, and to render it as palatable as if fresh meat had been cooked. There has been such wholesale deception in the preservation of meats, that the public is naturally suspicious in the matter; but we need not say that a cheap method of preserving meats in an effectual manner, would be most valuable both to the inventor and the public.

Lime Light from the Decomposition of Water.—Professor Callan, of Maynooth, has published, in a recent number of the London, Edinburgh, and Dublin Philosophical Magazine, the results of a series of experiments on the decomposition of water, with a view to obtain a constant and brilliant lime light. He states, firstly, that he has invented a new apparatus for applying with perfect safety the mixed gases, oxygen and hydrogen, to the production of a flame of the most intense heat, which, when thrown on lime, produces a most dazzling light. Secondly, that he has invented a new voltameter to which a common jet may be screwed, and the gases inflamed as they issue from it, without the smallest risk of injury, and by which the full decomposing effect of a battery of 100 or 500 pairs, arranged in one series, may be produced without exhausting the power of the battery more rapidly than if it only contained three or four cells. Thirdly, that he has discovered a new negative element, far cheaper, more durable, and one which may be made to act more powerfully than the platinized silver used in Smee's battery. Fourthly, that he has discovered a new mode of protecting iron against the action of the weather, and of various corroding substances, so that it may be used for all the purposes to which sheet-lead and galvanized iron are applied. Fifthly, that he has discovered a new method of producing a brilliant intermittent lime light by means of a small galvanic battery; and, sixthly, a new mode of exhibiting dissolving views by means of the lime light. Lastly, that he has invented a new sine galvanometer, the only instrument yet made by which very powerful galvanic currents can be measured.

A. C. Russel, of Kirtland, one of the heaviest sheep men on the Reserve, and who knows what a good sheep is, sent some of his best ewes to Brooklyn, last week, to be tupped by "Tippecanoe," the celebrated buck owned by Jno. Goes.

General Agency.—The publisher of *The Plough, the Loom, and the Anvil*, believing it in his power to be of essential service to the readers of that journal, in the purchase or sale of various articles, and the transaction of various kinds of business, would announce to them that he is ready to execute any such commission which he may receive, including the purchase of books of any description; implements connected with agricultural, manufacturing, or mechanical operations; artificial manures; farm and garden seeds, etc., etc. One of the gentlemen connected with the journal is a proficient in music, and experienced in the selection of piano-fortes, flutes, etc., and will execute orders in that department.

He will also act as agent in the purchase and sale of Real Estate.

☞ Particular attention to business connected with the Patent-Office.

Letters of inquiry on these matters will be promptly attended to.

School-Teachers. — Having had occasion to furnish teachers for some of our Southern friends, we have been fortunate enough to learn of several young ladies who are admirably well qualified for families or schools, and if any are in need of such, a letter addressed to us will receive immediate answer. We shall not fear to guarantee that any reasonable expectations will be fully met. Some of them are desirous of going South.

NEW BOOKS.

Wm. Hall & Son's New Music.

Among the capital pieces of new music published by this well-known firm, are Wemole Schottisch, by Wm. Vincent Wallace, very beautiful when nicely executed. It is also a capital exercise for those who would acquire a firm and vigorous touch.

3me Grand Polka de Concert, by Wm. V. Wallace—very difficult, but very fine.

The Dream of Youth, song and quartet, by Wm. Ineho—simple, natural, and effective.

Down the River, down the Ohio, as sung at Christy's, by E. P. Christy—quite characteristic.

Messrs. Hall & Son have recently produced a great excitement among the music dealers, by offering all their music, not copy-righted, at about half price. Their idea is to give music a value like other publications, not merely by the square foot, but by its cost, modified somewhat by other considerations. Whether this is or is not a wise policy, is not for us to decide, though we confess we do not see why an impression from an old plate which has produced its thousands and tens of thousands of copies, and been thrummed for years, should command as much price as new music, especially that for which a large sum has been expended in the purchase of a copy-right. But one thing we do know. This is a capital opportunity to obtain a large portfolio of good music very cheap. This arrangement may be permanent, and it may not. Hence all should avail themselves of it. Let any of our subscribers make out their lists, inclose their cents at half price, "or thereabout," and send to us, and we will purchase and forward immediately as ordered, *without charge*. And though we much prefer definite instructions, we will venture to assume the task of selection, provided the general character of the pieces desired is sent to us with their cost. State also what proportion of vocal or of instrumental is desired.

The Field-Book of Manures; or, The American Muck-Book, etc., etc. By D. J. Browne. New-York: C. M. Saxton.

We have before commended this book. We repeat the commendations before given. It is literally full of valuable instruction in the making and using of all manures, ani-

mal and artificial. It is entirely reliable from beginning to end. It would be difficult to improve it.

"Father Clark;" or, The Pioneer Preacher. Sketches and Incidents of Rev. John Clark. By an Old Pioneer. New-York: Sheldon, Lamport & Blakeman. 1855.

This title is *doubled*, if not somewhat *twisted*. The book is the first of a series of "Pioneer Books," written, it is said on the cover, by Rev. J. M. Peck. Why the author's name is not on the title-page as well, we do not know. Father Clark was the first preacher who ventured into the Spanish country west of the Mississippi. His earlier life was various—a sailor, privateer, a prisoner, a fugitive, shipwrecked, a teacher, and a preacher in the South and West. He died in 1838.

The American Almanac and Repository of Useful Knowledge, for 1855. Boston: Phillips, Sampson & Co.

This annual is filled, as usual, with a large amount of valuable information. The statistics are full and reliable. The execution of the volume is very creditable to the publishers.

Poems of the Orient. By Bayard Taylor. Boston: Ticknor & Fields. 1855. 208 pages.

This volume is handsomely executed, and it ought to be, for it contains some of the finest things we have seen for many a day.

> "And the poet knew the land of the East;
> His soul was native there."

The soul of our author is quite at home, whether he treats of the "Arab Warrior," "The Temptation of Hassan Ben Khaled," or "The Birth of the Prophet." "The Sheikh," from the Arabic, is a very beautiful effusion. There is certainly poetry, and of a high order, and nature, perhaps unsanctified, in "In Articulo Mortes." There is much to commend in this little volume.

De Bow's Review.

We have taken occasion repeatedly to commend this publication. It is chiefly statistical, and of course less attractive as a mere amusement than many of far less value. But Mr. De Bow is a worker, and he works to some purpose. His pages uniformly exhibit proof of this. His connection with the census department gives him peculiar facilities for a work of this description, and if his results are sometimes imperfect, it is not from want of care on his part, but from errors in original documents. But other matters beside statistics are always found in this journal, both from his own pen and from contributors, and these contributors, for ability and information, will not suffer by comparison with those of any other journal. It surely deserves a liberal patronage.

This Review has recently been enlarged. Each monthly number now contains 144 pages, and the editor will devote his time exclusively to it. It is published both at New-Orleans and Washington.

Statistical View of the United States, Etc.; being a Compendium of the Seventh Census. By J. D. B. De Bow, Superintendent of U. S. Census. 1854.

This volume has just been sent us through the courtesy of Mr. De Bow. It is a House document. The contents are prepared, evidently, with unusual care. Several tables are added, not found in former volumes of this description. Mr. De Bow is a very industrious and efficient officer.

A Universal and Critical Dictionary of the English Language; to which are added Walker's Key to the Pronunciation of Classical and Scripture Proper Names, much enlarged and improved, and a Pronouncing Vocabulary of Modern Geographical Names. By Joseph E. Worcester, LL.D. Boston: Jenks, Hickling & Swan, Publishers.

Johnson's Dictionary (Todd's Edition) and the words found therein, and in common use, are without cited authority. To these have been added nearly twenty-seven thousand words, and authorities given. Beside a complete dictionary, this volume comprises the principles of pronunciation, orthography, English grammar, the history and origin of the English language, Archaisms, provincialisms, and Americanisms. Also, Walker's Key to the Classical Pronunciation of Greek, Latin, and Scripture Proper Names, and a department devoted to the pronunciation of modern geographical names and European languages, which are alike invaluable to the student and the common reader.

List of Patents Issued

FROM DEC. 12, 1854, TO JAN. 2, 1855.

Nathan Ames, Saugus, improvement in polygraphs.

Nathan Ames, Saugus, for improved polygraph.

Gaetan Bonell, Turin, Sardinia, improvement in operating looms by electricity. Patented in France, Aug. 15, 1853.

E. F. Brown, Dorchester, Mass., improvement in hanging carriage bodies.

Mathew Cridge and Samuel Wadsworth, Pittsburg, improvement of oscillating steam-engines.

Wm. P. Cumberland, Newark, improvement in machines for bending metal. Patented in England, Jan. 23, 1854.

Thos. O. Cutler, New-York, improvement in machines for crushing and grinding minerals and other substances.

Charles Danforth, Paterson, N. J., improvement in throstles for spinning cotton.

George W. French and William Wagstaff, Cambridge, improved method of destroying vermin.

Moses Gates, Gallipolis, improvement in hoes.

John Good, Philadelphia, improvement in coffins.

E. L. Hagar, Frankfort, N. Y., improvements in harrows.

J. W. Hoard, Providence, angler's combined float and sinker.

Enoch Jackman, Portland, Ct., improvement in securing carpets to floors.

Jacob Jenkins and John R. Cooke, Winsted, Ct., improvement in hub-bands for carriages.

Edward C. Johnson, Lowell, improvement in flyers.

H. A. Luttgens, Paterson, N. J., improvement in cut-off regulators for steam-engines.

J. W. Lovecraft, Rochester, feed motion for sawing light lumber.

Wm. Lyon, Newark, improvement in sewing-machines.

Henry H. Olds, New-Haven, improvements in propulsion of vessels.

Eldridge H. Penfield, Middletown Ct., improvement in dock-holders for horses.

James Perry, New-York, improved gold-collector.

Henry A. Roe, West-Andover, Ohio, improvement in cheese-vats.

Joel H. Ross, New-York, improved hygrometric regulator for hot-water apparatus.

George Ross, New-York, improvement in looms.

Geo. W. Stedman, Vienna, N. J., improvement in sewing-machines.

Daniel W. Shares, Hamden, Ct., improvement in seed-planters and cultivators.

Jeremiah Stever, Bristol, Ct., improvement in machine for scraping metals.

Edward Stieren, Alleghany county, Pa., improvement in processes of treating the mother water of salines.

Benjamin F. Taft, South-Boston, for boring machine.

Henry Waterman, Hudson, improvement in condensers for steam-engines.

D. P. Weeks, Malden, Mass., improved hot-air furnace.

Jacob Weimar, New-York, improvement in door-locks.

C. W. Wyatt, New-York, machine for dressing felloes.

Daniel L. Winsor, Duxbury, improvement in ships' windlasses.

John Andrews, Winchester, Mass., assigned to himself, Nathaniel A. Richardson, and Gardner Symones, of same place, for improvement in seed-planters.

M. J. Lieberman, New-York, assigned to George S. Hanford, Solomon H. Handford, and John E. Hanford, for improvement in water-proof cloths, etc.

Henry and William Tiebe, Cincinnati, assignors to themselves and Harmon H. Horman, same place, for improvement in casting the spouts of teapots.

Joseph Perkins, Salem, Mass., assignor to himself and Henry P. Upton, of same place, for improvement in trussing yards to vessels' masts.

Chas. P. Bailey, Zanesville, for feeding apparatus to a machine for cutting irregular forms.

S. W. Brown, Lowell, improvement in condensers.

T. J. Chubb, New-York, improvement in metal separators.

Maj. B. Clarke, Newman, Ga., improvement in cleaning seed-cotton and feeding it to the gin.

David W. Clark and Sylvester H. Gray, Bridgeport, Ct., for double-acting force-pump.

Horace J. Crandall, Boston, improvement in bilge supporters for holding vessels in docks.

Daniel Fitzgerald, Thos. Rogers, and Wm. C. Walker, New-York, improvement in guards for ferry-boats.

Jno. S. Gage, Cowagiac, Mich., improvement in clover harvesters.

Geo. W. Grader and Benj. F. Cowen, Memphis, improvement in grain mills.

Stephen Hadley, Jr., Lyman, N. H., for direct action water-wheel.

Isaac B. Howe, Northfield, Vt., improvement in machines for straightening heavy metal bars.

Wm. B. Leonard, New-York, improvement in dynemometers.

Chas. Merrill, Malden, Mass., improvement in sash-fasteners.

James Myers, Jr., New-York, improvement in making sugar-moulds.

Geo. Reynolds, Bangor, improvement in compositions for tanning.

John P. Sherwood, Fort Edward, improvements in cut-nail machines.

Jona. Smith, Neponset Village, Mass., improved method of holding vessels by the keel in dry and other docks.

John J. Speed, Jr., and John A. Bailey, Detroit, for shingle-machine.

Louis Stein, New-York, improvement in revolving fans for apartments.

Samuel Taggart, Indianapolis, for improved clutch in machines for packing flour.

Nathan Thompson, Jr., Williamsburgh, improvement in life-preserving seats. Patented in Eng., Sept. 18, 1854.

Grey Utley, Chapel Hill, N. C., improvement in boot-crimping machines.

Daniel P. Weeks, Malden, Mass., improved oven cooking range.

Wendell Wright, New-York, improvement in spring-bed bottom.

Robert Griffiths, Allegheny City, and Geo. Shields, Cincinnati, assignors to Robert Griffiths, aforesaid, improvement in machines for forging horse-shoes

Wm. F. Ketchum, Buffalo, assignor to Rufus L.

Heward, improvement in grain and grass harvesters.

Elisha Pratt, Salem, Mass., assignor to Elisha Pratt and H. E. Upton, of same place, improvement in leather-splitting machines.

Milton Roberts, Belfast, Me., assignor to Milton Roberts, and Hiram E. Pierce, same place, improved machine for turning prismatic forms.

Allen B. Wilson, Watertown, Ct., assignor to W. P. N. Fitzgerald, Washington, D. C, improvement in sewing-machines.

Norman Aylsworth, Rochester, improvements in machines for boring, planing, and slotting metals.

David Baldwin, Godwinville, N. J., improved apparatus for feeding paper to printing-presses and ruling-machines.

Wm. Ballard, New-York, improvement in constructing vessels.

Abram Brigham, Manchester, N. H., improvement in looms.

John E. Brown and Stephen S. Bartlett, Woonsocket, R. I., improvement in grain and grass harvesters.

Thos. H. Burley, Cincinnati, dovetailing machine.

Marshall Burnett and Chas. Vander Woord, Boston, improvement in grain and grass harvesters.

S. J. Butterfield, Philadelphia, improvement in locks for fire-arms.

J. Caffry, Paradise Township, Pa., improved trap for catching animals.

Thos. J. Flanders, Manchester, N. H., construction and mode of driving circular saws.

Ezekiel Gore, Bennington, Vt., improvement in churns.

Jesse W. Hatch and Henry Churchill, Rochester, improvement in machines for cutting out boot and shoe soles.

Chas. W. Hawkes, Boston, and Geo. P. Reed, Waltham, improvement in compensation balances for time-keepers.

Alex. Holstrom, New-York, improved apparatus for atmospheric pile-driving.

James B. Harris, Cincinnati, improvement in railroad chair machines.

Asa P. Keith, Bridgewater, Mass., improvement in cotton-gins.

Julius H. Krohl, New-York, improvement in machines for forming flanges on wrought-iron beams.

Hazard Knowls, New-York, for cutters for tonguing and grooving.

Westley M. Lee, New-York, improvement in machines for forging car wheels.

Jean F. LaMovinier, New-York, improvement in constructing pavements, etc.

Adrian V. R. Orr, Steelsville, Pa., for a shingle machine.

Samuel Pearson, Jr., and Wm. H. Gardner, Roxbury, improvement in regulating the size of roving.

Obediah Rich, Cambridge, Mass., improvement in processes for extracting tannin from leather.

H. J. Rogers, Baltimore, improvements in signal flags.

Sylvanus Sawyer, Fitchburg, Mass., machine for splitting rattans into strips.

Richard A. Tilghman, Philadelphia, improvement in processes for making soap.

Farnham Z. Tucker, Brooklyn, improvement in life-preserving rafts.

Henry G. Tyer and Jno. Holm, New-Brunswick, improvement in processes for making India-rubber cloth.

Wm. E. Ward, Fort Chester, improvement in sheet-iron blinds.

Daniel T. Ward, Newark, improvement in sewing-machines.

Edward A. Foote, Hartford, improvement in protecting slides and ways from dust.

Rufus Keeler, Rochester, assignor to Lewis C. England, New-York, improvement in tanning processes.

Lewis Kech, New-York, assignor to Theodore Pincus, same place, for machine for manufacturing wooden boxes.

P. H. Niles, Boston, assignor to himself and J. A. Richards, same place, improvement in curtain fixtures.

A. H. Ward, Jr., Boston, assignor to himself and Kirk Boolt, some place, improvement in compositions for unhairing hides.

Alex. Anderson, Markham, Canada, improvement in seed-planters.

Robt. Arthur, Washington, improvement in self-sealing preserve-cans.

S. B. Balchelder, Lowville, improvement in journal boxes for carriages.

Wm. H. Brown, Erie, improvement in suspended purchases. Patented in England, Oct. 2, 1854.

Sharpless Clayton, West-Chester, Pa., improvement in teeth.

Willard Cowles, Washington, improvement in apparatus for stereotyping.

Levi Dedrick, Albany, improvement in ox-yoke.

St. John D'Doris, Philadelphia, for composition for fuel.

Adolph Hammer, Philadelphia, improvement in fermenting tuns for beer.

Emanuel Harmon, Washington, improvements in fire-proof iron buildings.

M. G. Hubbard, New-York, improved mode of hanging the knife in planing machines.

Jno. Imel, Liberty, Ind., improvement in cultivators.

Asa Keyes, Brattleborough, improvement in machines for cutting and trimming slate.

Philip W. Mackenzie, Jersey City, for machine for blowing blasts, etc.

Henry Miller, New-York, improvement in steam railroad-car brakes.

Russell S. Morse, East-Dixfield, Me., improvement in fruit-dryers.

Francis Randolph, New-York, improvement in elevating scaffolds.

Emile Sirret, Buffalo, improvement in rakes.

John A. Taplin, Fishkill, improved method of hanging a path-finding saw.

Cuno Werner, Philadelphia, improvement in compositions for dressing leather.

Chapman Warner, New-York, improvement in cast-iron pavements.

Wm. J. Warburton, Philadelphia, improvement in hats.

Warren Wadleigh, Hill, N. H., improved machine for cutting irregular forms.

Jos. S. Winsor, Providence, improvement in machine for making weaver's harness.

Lysander Wright, Newark, for sawing-machine.

Daniel Wells, Philadelphia, for burglar's alarm.

Stephen Brown, Syracuse, improved press for printing different colors.

Warren S. Burgess, Norristown, Pa., improved arrangement in double-piston steam-engines.

Pulaski S. Cahoon and Samuel J. Ross, La Grange, Me., approved chuck for turning elliptical cylinders.

Amory Felton, Troy, improvement in grinding mills.

Wm. Hicks, Steubenville, improved paint brush.

Sidney Kelsey, Erie, improved printing-press.

C. Locher, New-York, improvement in folding life-boats.

Jas. Lewis, Prattville, N. Y., improved printing-press.

Thos. Slaight, Newark, improvement in padlocks.

John Smith, of Cincinnati, improved crank connection in double-piston steam engines.

Dwight Gibbons, Rochester, assignor to F. Starr, same place, improved brace for piano frames.

Joshua Stevens, of Chicopee Falls, assignor to Massachusetts Arms Company, of same place, improvement in repeating fire-arms.

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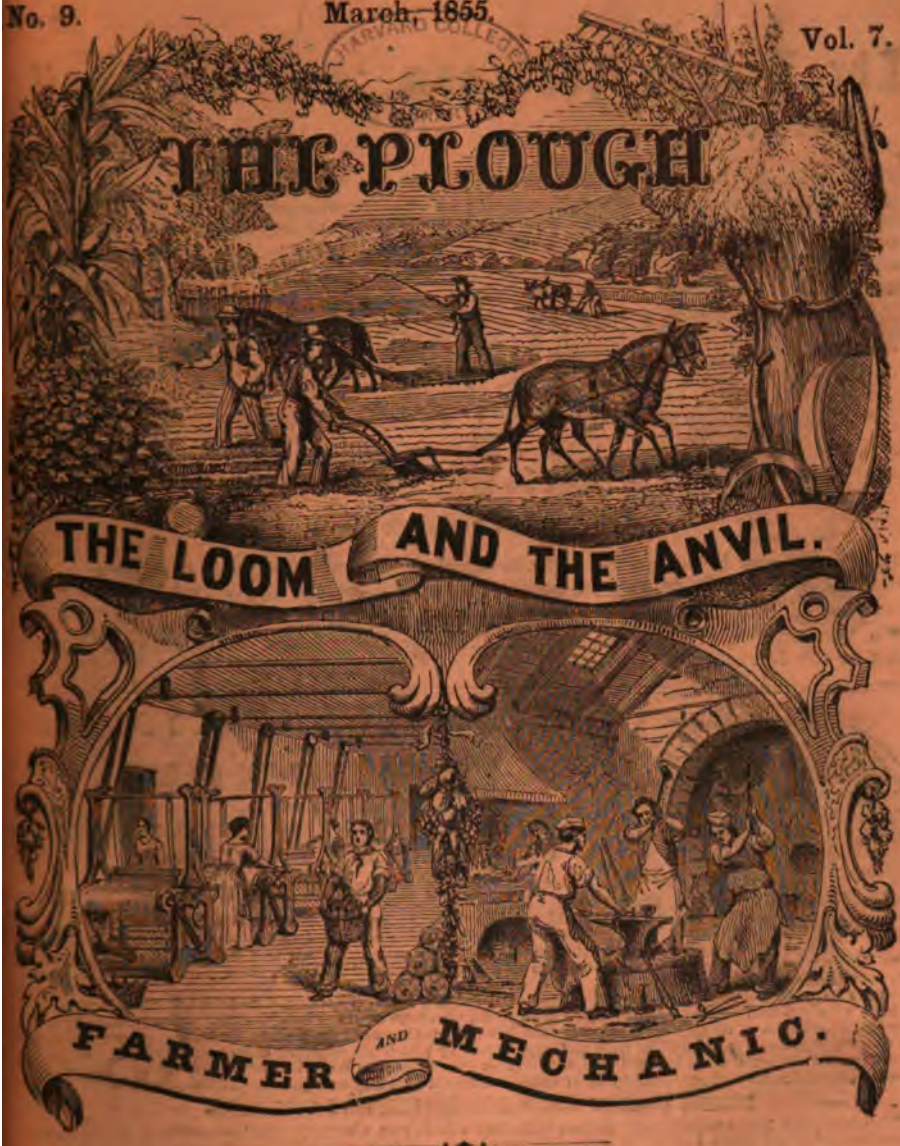
No. 9. March, 1855. Vol. 7.

HARVARD COLLEGE

THE PLOUGH



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The Plough, the Loom, and the Anvil.

VOL. VII. MARCH, 1855. No. 9.

"COMMERCE IS KING"

So was Charles I., of England, and so is Francis Joseph, of Austria. There are kings who have but little power of their own, and that little they abuse. There are kings, who, distrustful of themselves, carry out the suggestions of wise counsellors, and they have far more credit for intelligence and energy than they really deserve. There are kings, whose crown is theirs of right, whether reference is had to descent or to personal desert. There are kings, whose authority is acknowledged with not a little of awe and reverence; and there are kings who are permitted to retain their title and their place because they do no harm, and allow every body to manage their own affairs.

Without regarding the particular sense of the phrase, when this "common saying," which we have taken for our title, is uttered by one and another of this or that nation, let us examine, in the light of facts, what is its TRUE sense. How, and why, and where, is commerce king? We could point to countries and to regions of less extent, where, in a mistaken sense, it is supposed that commerce reigns; and we could show too, that sometimes this reign is anything but just and kind. We could point out localities and times when her iron heel is upon the head of those under her authority, while they all live and breathe only as she nods a contemptous permission. But we can also point out the times and the places where she is as submissive and unpretending a servant as any Ethiop. She has no will but that of her subjects, and she ceases to labor only by their consent.

There are some phrases that seem to be chiselled into the very granite of our social structure that are very indefinite in their meaning. But this does not prevent their use on all occasions and for all purposes. They are heard either as sigh or song in every breeze; they are uttered in triumph or in dismay, as they encounter one or another class of the community. Perhaps what was commenced as a shout is echoed back in the note of despair. "Commerce is King" may be, by bare possibility, of this class.

This cry reminds us of a story told of more than one, but which describes an actual scene in the life of an eccentric divine, of Berkshire County, Mass. "In those days came John the—Episcopalian? No, that does not sound right. In those days came John the—Presbyterian? No, that is not it. In those days came John the—the Baptist? Ah, yes; 'John the Baptist.' So you see, my hearers, John was a Baptist." So "Commerce is King." But who is Commerce? What is this king? Is he a man? a ship? a class? a clan? Does he live on land or on the sea? Is his throne near by, or "afar

off!" Does he take cognizance of all, or only of the great? Who is he, and what is he?

Commerce, says Webster, (*we* go for Webster,) is—"1. An interchange or mutual change of goods, wares, productions, or property of every kind, between nations or individuals, either by barter or by purchase and sale; trade; traffic—foreign or inland. 2. Intercourse between individuals, interchange of work, business, civilities, or amusements; mutual dealings in common life." And Daniel Webster has spoken of "a vast *commerce of ideas*."

Now in view of this definition, we confess ourself almost puzzled. We hardly know what to say next. The *thing*, the image, is almost as misty as the form described in Milton's first book; as formless as the spirit which we can scarcely seem to see in the 4th chapter of Job. Its limits pervade all space. Its motions are felt in every place. Its breath is heard wherever one proposes a trade with his neighbor. His voice sounds loud in the auction-room, in the market, and on 'change. Wherever men meet, and each recognizes the existence of the other, there is commerce. Surely then, there is at least one attribute of power. Commerce *may* be king. But look again.

In the strictest, technical sense, commerce embraces "all exchange of goods, wares, productions, or property of any kind." No proper definition of the term can be given less comprehensive than this. Commerce with foreign nations, trade on the sea, exchange of large values—these are no definitions of commerce: No sane man ever so believed. These are parts, branches, departments of commerce, nothing more. And as we dwell on the subject, we are more than half persuaded, in spite of all that farmers, mechanics, or trades or crafts of any sort, can say, that "commerce *is* king."

But what does the phrase mean? Who will tell us? Is any one and every one king, who *carries on* commerce? Such a claim would be like that of some anti-monarchists, which makes every citizen a monarch—a monarch without the title, and destitute of power. Is this the case with King Commerce? Poor King Commerce!

Perhaps we can come to some result by a series of negations. And it is very clear that these words can not imply that the individuals, or any limited combinations of persons *interested* in commerce, can make themselves kings. Commerce is king; and these caballers, these factionists, these conspirators against the existing sovereignty, have no crown, no thrones, no court, no paraphernalia of authority. The chair of state is occupied. What if each owns a score of ships, or daily sells 10,000 barrels of flour, or every hour sends a ship to a foreign port. They are not commerce, and *commerce is king;* and what is more, it is not in their power to dethrone him. Nor are the small or the large, nor all the people interested in commerce, in any city, state, country, or continent, identical with commerce. All that can be said is that they live by it.

How far shall we pursue these negations? Probably we have already blown away some of the fog which rests on many minds in regard to this great image. They perceive that those interested in a thing, must be essentially and utterly, and in every part and particle, different from the thing in which they have this interest, and by which they thrive. All the merchants, traders, dealers, sellers, buyers, barterers, &c., &c., in all the world, *are not* commerce. Whatever is true, therefore, it is not true that those who trade in any particular sorts of wares or merchandize, have the throne and reign, of right, over others. It does not follow that "a merchant" can therefore *look down* on "a farmer" or "a mechanic." He is no more "commerce"

than they, and perhaps we may see, by and by, that the balance is, if any where, the other way. If commerce is king, then "foreign commerce" is but a foot or a leg, it may be only a toe. Let us see what the facts are, bearing most directly on this subject.

1. The man engaged in foreign commerce has first to procure every thing that he puts into trade, from those of other pursuits. Not a kernel of corn, not a grain of wheat, not a seed of an apple, not a particle of anything, can he have, even *for himself*, till he procures it, by the aid of, or through commerce, of the producer. His name goes through all the commercial papers of the country, as having sent out so many hundred thousand dollars' worth of apples, pears, figs, oranges, and other fruits, such a value of spices, so much cotton, tobacco, &c., &c. Where did he get it? He had to buy every mill's worth of the producers, the growers, the farmers. They had it, he had none. Which position seems like that of a king here? But have we strained, or tortured, or misapplied the truth in this representation? Surely not.

2. The foreign trader may fail to purchase these articles. He will have nothing to do with them. What then? Must the producers starve? By no means. They will graduate the amount to be produced by the probable demand, but they will be pretty sure to raise enough for their own use, so that *they* are safe. But where is "our king," who sent these goods to foreign nations? He begs of those producers to let him have at least enough for his personal necessities. Who is most like a king then?

Is this declamation? Is it mere theory? Look at facts. Of all the commerce of the world, it is fairly estimated that, in 100 parts

Trade among neighbors forms, - - - - - -	75
Trade among fellow-citizens, but living more remotely from each other, - - - - - - -	20
Foreign trade, - - - - - - - - - -	5
	100

Which interest stands highest here? This is not theory, nor speculation, nor dogma, nor sect, nor party. It is the result of actual calculation. And perhaps many persons will be surprised to learn that if all our foreign commerce were annihilated, the entire amount of trade would be directly diminished only by five parts in a hundred. Ninety-five per cent. would still remain.

There is, however, another view of the subject, which changes, to some extent, the appearance of this picture. In its essence. it is unchangeable. The parts of it are fixed on the canvass beyond the power of art to change them. We can, however, materially improve the shading.

Instead of adopting Adam Smith's division of labor into productive and unproductive, we are inclined to consider all forms of industry (so called) as productive, and arrange different craftsmen into those who—1st, produce valuable material, and those who—2d, by a change of form or condition of the material, add something to its value. Thus, by the *labor* of the farmer, with a trifling cost of money, one bushel of grain, of trifling value, becomes many, worth a large sum. This is his business, and he has no time for any thing else. He attempts nothing else. The miller changes the form and condition of this grain, and thus making it available for use as food, increases to some extent its value. The baker does the same. They are producers of the second sort. The second form may, in some cases, be quite as productive

as the first. Such is the case with the watchmaker, for example. Suppose all these opportunities of useful industry are promptly and fully met, that territory then may be said to be supplied with all the population it can support. It can feed no more. But a new thought is suggested. There is a community "elsewhere," who, being otherwise occupied, do not produce this useful article of food; and it is ascertained that the producers, if they could but convey the material to that community, would find a ready market at a paying price. But who shall convey it? They have business enough in producing it, and can not endure this additional labor. They may find a third party, who will transport their merchandize for them, for a reasonable compensation. This third party is, then, the foreign merchant. The producer pays him for his services; they cultivate more land, secure greater crops, and also supply the third party with his food, as he has no opportunity to produce it for himself, and thus they again have an increased demand for the results of their labor. They call in help from abroad. Their sons, as they grow up, are all engaged in the same labor, and both the communities are thus increased; while the third party, the carrier, obtains a very important position. He is dependent on them for his daily bread. They are dependent on him for the profit that may be obtained from their *surplus* products. If he abandons them, they must limit their products to their own wants, *or become their own carriers;* and whether the one or the other would be the more profitable, would depend entirely on circumstances.

It is true, however, that producers generally can not be carriers. If they would get the profits of their increased production without help from others, they must induce the people to whom they have before conveyed their food, to change their location, and to come and reside in their neighborhood. When this is done, the only third party they will need is one of the younger boys, who will drive the team to the neighboring village, and there leave what has already been contracted for, or what will be called for as soon as it arrives. And here we have the value of immigration, not the immigration of rival producers, but of consumers; not of farmers, but of artisans and manufacturers.

But "commerce is king," although our commercial hero of the third party has abandoned the field, and is no more heard of. And how is "commerce" king? Evidently thus. All these arrangements are made with a view to increase the facilities of commerce. It is for this the *merchant carrier* was dispensed with. His employment, as a business by itself, was abandoned, for the very purpose of encouraging commerce. The interests of trade, that is, of commerce, are promoted thereby, though at the ruin of the foreign shipper, and thus COMMERCE IS KING. Another view of a kindred topic will be found in another page of this journal.

TREATMENT OF BOOTS AND SHOES WHEN BURNED.—In our juvenile days we had occasion, too often, to need a cure for carelessness in burning our boots, and we used to apply, with good effect, an application we have seen recently recommended in a late exchange. Apply, very liberally, and instantly, soft-soap to the burned leather, till it is perfectly saturated. If not too badly burned, the leather will be soft and pliable as before.

To THAW PUMPS.—Procure a lead tube of convenient length to reach the ice; place the tube on the ice, and pour into it hot water, till the whole is melted.

IRON TRADE OF SWEDEN AND NORWAY.

BY H. SCRIVENOR.

SWEDEN has been long celebrated for its mines and mineral productions, particularly iron, which still forms one of the principal exports, although it has much decreased of late years. By an account taken by the government in the year 1748, we find that, at that time, there were 496 foundries, with 539 large hammers, and 971 small ones, for making bar and other manufactures of iron, which produced 304,415 ship-pounds*, or nearly 40,600 tons.

The government established an office in 1740 to promote the production of iron, by lending money on the ore, even at so low a rate as 4 per cent.; a correct register was then made of the mines, which is still continued. Each forge has its particular mark stamped on the bars of iron it produces, which is correctly copied into the manuscript, with the name of the place where the establishment is situated—the names of the proprietors of the work—the commissioner or agent for the sale of the iron—the assortment each makes, and to what country it is generally shipped—the quantity annually made by each work—the quantity which each work delivers to the government (which is about 1 per cent. on the quantity of the iron produced)—the estimation of the quality of the iron of each work, which is variable—the place and province in which the works are situated—the place from whence the iron is generally shipped, and how many hammers each work has: all which particulars are regularly and alphabetically described and arranged.

As the working of the mines is attended with considerable expense, and the sale of the iron uncertain, the Bank of Stockholm receives that metal as a proper security for a loan. The iron being duly appraised, and lodged in the public warehouse, the proprietor receives three-fourths of its value, at the interest of 3 per cent., and when he can find an opportunity to dispose of his iron, it is again delivered to him, on producing a certificate from the bank, that the loan upon it is duly discharged.

The iron mine of Dannemora, the most celebrated in Sweden, is situated in the province of Upland, about one English mile from Osterby, and thirty English miles north of Upsala. This mine was discovered in the year 1448, and though it has now been wrought for four centuries, it still yields abundance of the best iron in Europe.

The iron mine is on a hill so little elevated above the surface of the neighboring country as easily to escape observation. It is about two English miles long, and nearly half a mile broad; it is almost surrounded by lakes—those of Dannemora, Films, and Grufve, lying quite contiguous to it. On the side where there are no lakes there is a turf moss. The ore forms a large vein in this hill, which stretches in a north-west and south-east direction. The mine was some years ago inundated by the water from the adjacent lakes; a strong wall, however, has been built to keep off the water. It is drained by two steam engines, kept at work by means of wood for fuel.

It was first wrought as a silver mine, the silver being extracted from galena. This source of emolument soon failing, or becoming unproductive, the iron ore began to be extracted and smelted, and the excellent quality of the iron gradually drew to it the attention of the public. At first it belonged to the King of Sweden, but that monarch consigned it over to the Archbishop

* 7½ to a ton.

of Upsala as a part of his revenues; at present it belongs to a number of private individuals, who work it separately, each on his own account.

At the side of the mine is a large opening, about fifty fathoms deep, and fifty wide, and at the lower part of this is the entrance to the mine, which is wrought about thirty fathoms deeper than this opening. The mines are thus described in "Coxe's Travels," who visited them in the year 1790:—"The pits are deep excavations, like gravel pits, and form so many abysses or gulfs. The descent is not, therefore, as is usual in mines, down a narrow, subterraneous shaft. At the side of the mine I stepped into a bucket, and, being suspended in the open air, in the same manner as if a person was placed in a bucket at the top of Salisbury spire, was gradually let down to the ground by a rope and pulley. The inspector accompanied me to the bottom, and while I was placed at my ease in the inside upon a chair, he seated himself on the rim of the bucket, with his legs extended to maintain the equilibrium. He had in his hand a stick, with which he gently touched the sides of the rock, and the rope of the ascending bucket, in order to prevent our bucket from swerving against them, which must have infallibly overset us.

While hung suspended in mid-air, and so giddy that I could not venture to look down, I observed three girls standing on the edge of the ascending bucket, knitting with as much unconcern as if they had been on *terra firma*; such is the effect of custom. We were about five minutes in descending, and the depth which we reached before I stepped out of my aërial seat was 500 feet. Not being a mineralogist, my curiosity was soon satisfied; I again got into the bucket, and was drawn up in the same manner.

The inspector informed me that the richest ore yields 70 per cent. of iron, the poorest 30; that, upon an average, the collective mass gives one-third of pure material; that about 12,000 tons are annually drawn from the mines, which yield about 4000 tons of bar-iron.

The mass of ore occupies a small compass. The length of the pits, considered as one, is 760 feet, and the breadth, from three to twelve. The ore runs from east to west. The richest ore is near 500 feet in depth, and the Storoe Grube is not yet fathomed.

The matrix of the ore being a calcareous earth, consequently contains but little sulphur, which is, perhaps, the reason of its superior quality."

The ore is blasted with gunpowder. The part of the vein which lies under the great opening which forms the mouth of the mine, is called *stor rymning*; it constitutes by far the greatest portion of the mine. The next portion is called *jord grufva* (earth mine), and it yields the ore of the very best quality. The portion farthest south is called *sodra grufva*, or southern mine; it yields the worst kind of ore of all the three, probably from being mixed with galena and blende. The rock through which the vein runs is said to be quartz. The substance immediately contiguous to the vein appeared to Dr. Thomson to be hornstone, and to contain hornblende. The ore itself contains limestone, quartz, and actinolite, and affords from 25 to 75 per cent. of cast-iron. In the worst kind of ore Dr. Thomson also perceived blende, fluor-spar, galena, and amethyst, but in small quantities. Carbonate of lime, crystallized in dodecahedrons, also occurs in this vein; and likewise sulphate of barytes, mountain cork, and the aplome of Haüy.

The ore is broken into small pieces, and roasted; it is then put into conical shaped furnaces, constructed of the slag from cast-iron. In these furnaces it is mixed with the proper quantity of charcoal, and then melted and separated from the slag. The cast-iron obtained in this manner is as white as

silver, completely crystallized, and very brittle. The cast-iron is reduced to malleable iron by heating it in a bed of charcoal, and hammering it out into bars. In this state it is whiter than common iron, and is less liable to rust, is distinctly fibrous in its texture, and much stouter than any other iron.

The cause of the superiority of the Dannemora iron has never been explained. Some chemists ascribe it to the presence of manganese. Berzelius attributed it to the presence of the metal of silica, while others suppose it to arise from the nature of the process employed. Dr. Thomson was assured by one gentleman, who had bestowed particular attention to the subject, that, by following a similar process, he has obtained as good iron from other Swedish ores. But that something is due to the ore itself is evident from the circumstance, that the quality of the iron, though the same process is followed, differs a good deal, according to the part of the vein from which the ore is taken.

In the neighborhood of the mines are establishments for forging the iron, and for the accommodation of more than 300 workmen and their families. Each of the little villages has three or four regular streets, often planted with trees, a church, a school, and a hospital.

In 1833 there were in the whole of Sweden from 330 to 340 smelting furnaces, producing 90,000 to 95,000 tons of pig-iron; in converting this into bar-iron, about 23 per cent. is allowed for waste, and, as near as can be ascertained, the annual manufacture of this latter is 68,000 to 65,000 tons. The number of iron works is about 420 to 430, having about 1100 forge-hammers. The annual export of bar-iron, on an average of ten years, ending 1831, was 49,568 tons. The smelting furnaces and iron works are licensed for a particular quantity, some being as low as 50 tons, others as high as 400 to 500 tons per annum; some few bar-iron works draw licenses for 1000 tons each. The licenses are granted by the College of Mines, which has a control over all iron works and mining operations. The iron-masters make annual returns of their manufacture, which must not exceed their privilege, on pain of the overplus being confiscated, and the college has subordinate courts, called courts of mines, in every district, with supervising officers of various ranks; and no iron can be sent to any port of shipment without being landed at the public weigh-house, the superintendent of which is also a delegate of the college, and his duty is to register all that arrives, and to send his report quarterly to the college. It is impossible for an iron-master to send to market more than his license. Many, however, sell at the forges to inland consumers, returns of which are never made, and so far licenses are exceeded, but it is supposed this excess cannot be above 3000 tons.

There is no chance whatever of the manufacture of iron in Sweden becoming free; on the contrary, there is much greater probability of its decrease; as in those parts of the country where iron works are established, there are already as many forges as the neighboring forests can supply with charcoal. If there are proprietors of forests on which they can prove that iron works have not been privileged in former times, in that case the Government can not refuse to grant the right of erecting works in proportion thereto; but, except either very far north, or far in the interior, there do not exist such woods.

It does not always follow that the forests belong to the proprietors of the iron works, but they have, nevertheless, the right of purchasing all the charcoal sold from these woods. We may consider the case in this manner:—A person, a century back, who had 20,000 acres of forest, may have ob-

tained the privilege of manufacturing 200 tons of iron annually; the estate in the lapse of time has become divided amongst a number of heirs, or has been sold in lots to different persons; but the proprietor of the iron works still retains the right to the charcoal of the whole, if any is made for sale.

There is no department in Sweden conducted with more fairness than the College of Mines, which manages these matters.*

Years.	Average Produce. Unwrought Iron. Tons.	Bar-Iron. Tons.	Average Exports. Bar-Iron. Tons.
1833 to 1839 . .	89,610	73,592	58,766
1840 — 1844 .	105,485	84,041	66,046
1845 — 1849 . .	106,630	90,466	74,069
1850 — 1852 .	124,169	99,889	75,940

Important recent discoveries have had, and necessarily will have, a material effect on the iron manufacture of Sweden. Dr. Ure may introduce the subject to our readers in the following observations respecting Mr. Heath's experiments in the manufacture of *steel* and their results:

"One of the greatest improvements which this valuable modification of iron has ever received is due to Mr. Josiah M. Heath, who, after many elaborate and costly researches upon both the small and the great scale, discovered that, by the introduction of a small portion (1 per cent., and even less) of carburet of manganese into the melting-pot, along with the usual broken bars of blistered steel, a cast-steel was obtained after fusion, of a quality very superior to what the bar-steel would have yielded without the manganese, and, moreover, possessed of the new and peculiar property of being weldable, either to itself or to wrought iron.

He also found that a common bar-steel, made from an inferior mark or quality of Swedish or Russian iron, would, when so treated, produce an excellent cast-steel. One immediate consequence of this discovery has been the reduction of the price of good steel in the Sheffield market by from 30 to 40 per cent., and likewise the manufacture of table-knives of cast-steel with iron tangs welded to them; whereas, till Mr. Heath's invention, table-knives were necessarily made of shear-steel, with unseemly wavy lines in them, because cast-steel could not be welded to the tangs."

Mr. Heath obtained a patent for this and other kindred meritorious inventions, on the 5th April, 1839, "but, strange and melancholy to say," observes Dr. Ure, "he has never derived anything from his acknowledged improvement but vexation and loss, in consequence of a numerous body of Sheffield steel manufacturers having banded together to pirate his patent, and to baffle him in our complex law courts." Whether the remarks on the conduct of the steel manufacturers of Sheffield are just, is not important to this inquiry; the fact is, that various alterations and improvements have been effected in the manufacture, not confining it to the use of Swedish or Russian inferior marks, but to the use of English iron, and this to the extent of attracting the notice of Mr. C. F. Wœrn, Junior, a member of the Swedish Diet, who made it the subject of a motion in the Diet, 1853, 1854:—"On the repeal of the taxes on pig and bar-iron, as well as of the privileges still existing in favor of the mining districts and iron works of Sweden."

* In several parts of Lapland, the protoxide of iron occurs in great beds, or immense masses; at Gillivara, 200 leagues north of Stockholm, towards the 67th degree of latitude, it constitutes a considerable mountain. The iron is despatched in small sledges drawn by reindeer, to streams which fall into the Lutea, and thence, by water carriage, to the port of Lutea, where it is embarked for Stockholm.

Mr. Wœrn, in his Treatise—after a review of the iron trade in Sweden during the last twenty years, and arriving at the conclusion that the home consumption has certainly been on the increase, owing to the general growth of population and trade between the years 1834 and 1851—says: "Yet, in comparison to the population, the consumption per man is very much smaller than in other civilized countries; accurate calculations on this subject show the following results—all kinds of iron being reduced into pig-iron:

In North America the consumption is . .	88 lbs.	per head.
Great Britain, ...	81	"
France, ...	36	"
Hanover and Oldenburg, ...	29	"
German Customs' Union, ...	24	"
Switzerland, -	18	"
Sweden, ...	11½	"
Austria, ...	11	"
Russia, ...	8	"

At present there is reason to believe that the Swedish consumption is 14 lbs. per head."

He then speaks of the exports of bar and manufactured iron from Sweden, which, during the same period, he calculates to have increased about 25 per cent.

In order to show the insignificance of this increase, in comparison to that which has taken place in other countries, he reviews the trade, and speaks more particularly of the discoveries and improvements made from 1796 to 1851 in Scotland, and observes: "Instead of having been, as before these discoveries and improvements were made, only two-fifths of the Swedish production, it rose in Scotland in ten years to double the Swedish production, and is now six times as large. In Wales we notice the same thing, as well as in the United States, Belgium, Silesia, the German provinces on the Rhine, and even France. If we compare the countries which chiefly produce iron for the last twenty years, we find that

Great Britain . .	increased in	1850	244	per cent.
United States . .	"	"	471	"
France	"	1846*	141	"
Russia	"	1849—1851	20	"
German Customs' Union	"	1850	60	"
Austria	"	"	130	"
Belgium	"	"	217	"
Sweden	"	"	51	"
Norway	"	1841—1845	62	"

and thus the production has increased more rapidly in every country than in Sweden, with the single exception of Russia. Now, if we compare the total production of these countries twenty years ago, and that of Sweden at the same time, with what it is now, we find that the production of this country has suffered a decrease from $\frac{1}{16}$ to $\frac{1}{32}$."

He then goes on to the more important subject of the manufacture of English steel. He says: "I have found it impossible to obtain trustworthy information as to the amount of manufacture or consumption of English steel

* Mr. Wœrn states the make of pig-iron in France, in 1846, as 2,742,51 ship-lbs. T. v., equal to 457,087 tons.

iron; but to a certain extent such a guide is found in the number of steel furnaces in Sheffield and the neighborhood. I have had returns made at four different periods. The first, of 1835, is found in Porter's 'Progress of the Nation;' the second, of 1842, is given by Professor Le Play, in his excellent treatise on the manufacture of steel in Yorkshire; the third is of the year 1846, and is part of the evidence of one of the largest manufacturers of Sheffield, Mr. Henry Unwin, before a Committee of the House of Commons, on the occasion of a railway being applied for to Sheffield; and the fourth is the result of an account taken at my request by the same gentleman, in July, this year, of existing furnaces, in which he says he is so much the more sure of not having overstated the case, as he has separately noted the owner and situation of each furnace.

According to these statements, there existed, in Sheffield and the immediate neighborhood, in

1835,	56	blistered-steel furnaces, and		554	cast-steel furnaces.
1842,	97	"	"	774	"
1846,	105	"	"	974	"
1853,	160	"	"	1,495	"

The new furnaces are built rather larger than the old ones, and Mr. Unwin estimates their capacity of production at 300 tons annually, and the total production of steel in England at 40,000 tons.

Porter estimates the manufacture of steel in Sheffield in 1835 at 15,000 tons, of which 2,000 tons were from English iron. The same amount is given by Mr. Danielson, in his Treatise on the Manufacture of Steel in England in 1844. Mr. G. Ekman, in his letter which refers to Professor Le Play's work, estimates this production of 1845 at 3,000 tons; and, according to Mr. Unwin's statement, giving 40,000 tons as the annual production of steel in England, it must now amount to 7,200 tons, when the whole import of foreign iron not re-exported has been deducted. *The English steel-iron is, moreover, universally known for its closeness and pureness, and some of the best sorts are so much liked, that they fetch a higher price than the best Swedish marks.*"

Thus much as to the competition of British iron with Swedish, in Great Britain, for the manufacture of steel. He then refers to the export to other countries, and shows that of Great Britain to be five or six times as large as it was, whilst that of Sweden has been almost stationary,—"that the latter amounted to almost one-half of the export of Great Britain twenty years ago, and in 1850 it was scarcely a tenth part of it, and must since then have fallen off still more."

The object of Mr. Wœrn's motion was to alleviate, if possible, this state of affairs, by inducing the Government to remove all taxes and restrictions on the manufacture of iron. But the greatest difficulty Sweden has to contend against, as far as the increase of manufacture is concerned, is *the want of coal.*

Now comes a consideration, whether, with the immense abundance of rich ore which Sweden possesses, there are not certain localities where it may be shipped at a low rate of cost. Let the Swedish Government take off any heavy restrictions on the export of this ore, and a valuable trade may be encouraged between Gottenberg, or other shipping ports, and the port of Newcastle, thus bringing the ore to the coal, and a more certain benefit might be derived by Sweden than by an attempt at any great increase of the manufacture.

Oddy, in his work on "European Commerce," observes, that iron makes

no regular article of export from Norway; yet there does not appear any reason why they might not have cultivated this branch of manufactures as well as Sweden. Wood they have in sufficient abundance. There are several foundries in Norway, but they have not been worked with spirit; their produce is, therefore, but small. Since the year 1792 they have not much extended their works. Moss, a town of a thousand inhabitants, contains a principal iron work. Skaggerak is also in repute for its iron trade.

The iron mines of Norway lie on the coasts of the Gulf of Christiana, and on the side facing Jutland, principally at Arendal, at Krageroe, and the neighborhood. The ores consist almost solely of black oxide of iron, which forms beds in veins of from 4 to 60 feet thick, incased in gneiss. These iron ores are reduced in a great many smelting forges situated on the same coast, and particularly in the county of Laurwig. The annual product is about 7,300 tons, in the form of cast-iron, bar-iron, sheet-iron, nails, etc., of which one-half is exported.

AVERAGE MAKE OF BAR-IRON.

Years.	Tons.
1831 to 1835, ...	3,645.
1836 — 1840, ...	3,898.
1841 — 1845, ...	3,772.

Average export, about 2,050 tons.

FROM HUNT'S MERCHANT'S MAGAZINE.

THE WINE TRADE OF FRANCE.

LETTER FROM DR. GOODRICH, U. S. CONSUL AT LYONS.

I propose to give you, in this communication, some account of the staple productions of France, that may be of interest to many of the readers of the *Merchant's Magazine*, and especially so, as the vine culture is beginning to attract attention in the Southern and South-western sections of our own country.

As you are aware, the two principal products of France are wheat and wine—both entering largely into domestic consumption, and the latter yielding a surplus for exportation.

The most productive wine districts of France are the South and South-western, and the least productive is the North-western. The vine grows not only on the level and undulating lands, but also on the hill-sides and mountain summits. These lands are mostly stony, sandy, sterile, worn out, and unfit for wheat growing. During the last three or four years a destructive disease has attacked the vine not only in France, but in Italy, Spain, and Portugal. This malady is of a fungoid character, and its preventive or remedy has hitherto eluded the vigilance and researches of the chemist and naturalist.

In the statistics I shall give you—and they will be official—I will, for brevity, avoid the smallest numerals, as my object can be attained without them. The number of acres of land under vine culture in France differs but a little from 5,000,000. There are about 2,000,000 of persons (mostly females) employed in the cultivation of the vine and the manufacture of wine, exclusive of 250,000 engaged in the transportation and sale of wines.

The average annual product is a little more than 800,000,000 gallons—for obvious reasons I give you American rather than French terms. The domestic or home value varies of course with the supply and demand, say from ten to twenty cents a gallon. For the last two years, owing to the "disease," the price has augmented from one to two hundred per cent. on former prices. The annual value may be set down in round numbers at $100,000,000.

In the year 1849, which is probably the best for several years, the number of acres under cultivation was 5,500,000, producing 925,000,000 gallons of wine. This was an increase of 115,000,000 over that of the last decade, 1839. Nearly 50,000,000 gallons are annually exported as French wines. In 1849, 41,000,000 were exported; in 1850, 42,000,000; in 1851, 49,500,000; in 1852, 53,200,000; in 1853, 43,500,000. Ninety millions of gallons are annually distilled into brandy, although for the ensuing year, owing to governmental restrictions, there will be but little French brandy exported to the United States except that made from American whiskey imported into France. One-seventh, or about 133,000,000 gallons of wine, are annually exported from France, either as wine or its distillations. The excise duty on wine and its productions paid into the French Exchequer during the past year was $22,800,000. This includes the ordinary excise, as also the "Octroi" or city duty. There are, by estimate, 220,000,000 gallons of wine manufactured into spirits, inclusive of the 90,000,000 made into brandy. This leaves more than 700,000,000 gallons of wine for home consumption, or about 21 gallons for each inhabitant for the year.

Wine, as a beverage, is universally used here by all classes. The strong liquors are chiefly for exportation; hence, you see very little drunkenness in *la belle France.*

The disease of the vine in France has for the last two years been very destructive, and it has greatly diminished the production of wine. This is on the increase, and fears are entertained that it may totally destroy the vine. Under this apprehension, may not the subject of vine culture legitimately and appropriately attract the attention of our Southern and South-western planters? Many of our Southern lands, I opine, are peculiarly adapted to the vine, and from natural sterility or other causes are unsuited to products requiring richer and stronger soils. The lands of southern Europe employed by the vine are light and sterile, unsuited to wheat and other grains.

If our Southern farmers would, at this time more especially, turn their attention to this subject, would it not enure to their own individual interests, enhance the national wealth, and be promotive of national temperance by the introduction into general use of a cheap beverage, that would ultimately root out those "villainous spirits," whose baneful influence is felt throughout the length and breadth of our land?

In regard to the vine and its diseases in Europe, should the present condition of things continue for a few years, would it be the strangest fact in the history of commerce, if our favored country should become the exporter instead of the importer of wine? and may not the vine yet prove one of the sources of our national wealth, as well as the promoter of a sound national morality?

Such a result would restore the vine to its pristine value, as one of the good gifts of God. Yours, &c.,

CHARLES S. GOODRICH.

Lyons, France, September 1, 1854.

FARMERS' SALES AND CITY PRICES.

If some of our domestic animals knew their own strength, they might forever free themselves from the state of servitude in which they are now held. Like the lion and tiger, they might be their own masters, but they would, at the same time, assume the responsibility of providing for themselves, and, on the whole, the exchange might not be an improvement in their condition. Our farmers, however, year after year, live in voluntary bondage to an army of greedy bloodsuckers, who draw out of them, at beggarly prices, the hard earnings of the labor of months, while they remain ever doomed to constant toil, and must themselves incur the risk of droughts, and of floods, and of overstocked markets, and of blighted crops, with no one bound to give them food or shelter for a single day. And this bondage is the result, to a great extent, of their own inefficiency and indolent habits. They scarcely feel their chains, or if they do, they have no idea that they can possibly be shaken off.

How is this? A complex, expensive, and artificial system is called into being, having in special charge the interests of the producer, who is taxed therefor from sixty to ninety per cent. of his possible profits. This system is composed of carriers, brokers, commission agents, and men of various other sorts, who make their entire living out of the profits on the products of the farm, actually paid by the consumer. That consumers do pay cruelly high prices under this system is a matter of actual experience. That farmers, at the same time, obtain little or no advance over the prices of years gone by, is equally a matter of experience.

What would our farmers think of receiving from 18 to 25 cents for their beef? What castles would they not build, in imagination at least, if they should realize eight or ten shillings a pair for their chickens, and three shillings a dozen for their eggs? prices paid every day in this market. They now sell their chickens at three or four shilllings a pair, oftener the smaller of these prices; their eggs at twenty or twenty-five cents a dozen, paid in groceries; and so on through the chapter. Some services are required, we are aware, before the living animal is prepared for the operations of the cook. But we remember when the hide, tallow, and offal, paid the butcher for his services, and suppose this would not be thought unworthy of the craft in these later times; and as to poultry, eggs, and the products of the dairy in general, there is no occasion for extra services, requiring compensation, to fit them for the stalls and shops of the retailer.

The difference between eight and ten cents a pound for pork is by no means slight in the matter of profit; twenty per cent. does not tell half the story. Probably the pork itself cost six cents. All the farmer's profit, then, (save the manure,) is two cents, at the lower price, but is four cents at the the higher; and this increase from eight to ten cents, makes a difference in the gain of exactly ONE HUNDRED per cent. If they could get but ten cents a pound, selling directly to the consumer, and sell for eight cents to the middle man, then they pay him just half their entire profits. Wall street men could not afford to pay for services at that rate.

Every thing that the farmer produces, with very few exceptions, is subject to the expense of a burdensome and complicated system. His butter and eggs often go to the village grocer, in payment for goods at the highest rates,

which goods are often and usually of an inferior quality, and for a sum varying from one-half to three-fourths their fair price in the market. Milk is sold to the cartmen, in a pure state, for about one-half (often less) of what it brings in the city, after it is nearly or quite doubled in quantity by the addition of the Croton, to say nothing of the chalk mixtures—and so runs the whole story. The poor farmer toils on, overjoyed to get six or eight per cent. on his investment, but, in a majority of cases, doomed to drag on from year to year, subjecting his farm (for want of means) to a wretched system of management, which is annually destroying its ability to produce—glad if he can feed and clothe a family, every member of which toils, not like a slave, but harder than he, while even his children can scarcely be spared to go to school, even in winter. And all this for what? Because the lazy earth will not produce what she ought? NO!! But, because farmers have no means to feed her. She is feeble as old age itself. They are, year by year, trying out, as by fire, the fat of the land, and the poor thing shows signs of decay, not to be mistaken. And all this, while middle men, out of the same products of the farm, are building splendid city mansions, and living on the luxuries of the season, paid for, all of them, from the crops produced by these poor farmers.

Horrible as is this picture, we thank God that we can perceive no difficulty in producing an entire change in this system, if farmers shall so will it, so that the profits that are made shall go into the pockets of those to whom they properly belong—to wit, of the producers. And how can this be done?

To some extent, the way is clear, and without any hindrance. Time might be required for perfecting the details of this important reform, but the following are self-evident propositions.

So far as the large establishments of hotels and boarding-houses, in all our cities and villages, are concerned, every man, who may be relied upon for keeping his contract, might engage an almost indefinite amount of eggs, milk, meats, his vegetables, and, if a good dairyman, his butter and cheese, at prices much higher than are now received by first hands, though, perhaps, not quite so high as the consumers now pay. Our milk farms are scarcely among the most profitable sources of income, while commissions or charges, of some sort, are paid to two or three middle men, who get a large part of their income, perhaps the whole of it, from the profits which might be secured to the producer.

Suppose the Astor House requires fifty gallons of milk, at regular periods. Let an arrangement be made by which that quantity of milk, properly secured, shall be sent by cars, or otherwise, at the times agreed upon. The hotel keeper sends his porter, on its arrival, and takes possession, returning the cans at the same time. How simple is this machinery. If the hotel or boarding-house keeper does not wish the trouble of sending for it, let him pay one cent per gallon additional, or half that, according to circumstances, while you engage a faithful porter to do this service at your cost.

The same arrangement is practicable with eggs, and most of the productions of the farm, including vegetables and perishable fruits. All that is required to accomplish this is ENTERPRISE, and a good article. Nor would these establishments require a very limited supply. Hundreds, even thousands, of contractors for the whole products of a farm, so far as several of these articles are concerned, might be found, at once, in this city. Other cities would furnish customers in proportion to their size; and, by degrees, a general system, relieved chiefly, if not entirely, of high-priced middle men, might be put in operation, for the sale of all the varieties of products required

for our tables, and with very little trouble to any body. But if it were otherwise; if the labor were considerable, still that labor would have its reward, and that is just what an active, efficient farmer would desire—an increase of his labor, without an increase of required capital, which would bring with it a proportional increase of profit.

We could refer producers to moderate sized boarding-houses—say families of twelve to twenty persons, who would rejoice to make such an arrangement. We have heard them express views in accordance with these suggestions, and we have also known such plans in successful operation.

Nor would this be a small affair to the farming interest. At present rates, probably, it would quadruple their profits; and, at ordinary prices, it would more than double them. The farmer who now gets six or eight cents for his pork, makes but a very small profit. Three or four cents increase on each pound would be a very great gain. If he could himself receive twenty-five and twenty-eight cents a pound, in cash, for his butter, which the speculator now gets, he would, ere long, have money in the bank, after paying off his mortgage, and buying improved stock. Twenty-five cents a gallon for milk and water, even though it was only half-and-half, would enable him, if he choose, to keep his pleasure carriage and fast horses; and more than this does many an unscrupulous city cheat get every day of the year, for a meaner article, to say nothing of another large amount for chalk mixture, intended, more particularly, for the poorer classes, who are obliged to buy where they can.

This whole system of middle men grows, to a very great degree, out of the indolence and inefficiency of the producer. Do we not hear it said in reply, "the farmer does not wish to become a carrier, nor a porter, dancing attendance at the doors of city aristocrats." Very well; then let him be content with his two to four per cent. profits on his most productive articles, while his active and less conceited city neighbor takes these, his hard earnings, and, by performing such services, pockets an additional twenty to fifty per cent., and, by-and-by, becomes himself the city aristocrat. But why should not the farmer do this service? Is it less honorable to contract with another for the sale of an article, delivery included, than it is to plough, and hoe, and ditch, and make compost, in producing? Is it less honorable for him to sell and deliver, than it is for our dealers in dry goods? Very few, we trust, will raise such objections. But they "do not want the increase of care and attention such a plan would demand." In reply to this, we say, if an increase of care is to be thus rejected, whatever it might return by way of profit, then it would be better to sell half the farm, and thus, by confining the labor of production to a few acres, and realizing from their products a larger sum than is now obtained from the whole, and, with less care, secure a greater income with less outlay. The value of this other half might then be vested in safe and remunerative stocks.

Commercial agencies are very good things when they are wanted; but they are, generally, death to the producer. Their incomes, kept out of their pockets by their own consent, and with their eyes wide open, and without the use of chloroform, have built many a princely mansion in this and other cities, and furnished their tables with all the luxuries of the season, while the producer, who might have reaped this golden harvest, is shivering in a cold kitchen, and sits at a table supplied with the less desirable products of his own hog stye, toughened and possibly made unwholesome by saturation with salt, and not merely villainous, but poisonous salt petre. WHO SITS FOR THIS PICTURE?

MILK IN BREAD.

We are sometimes forced to confess ourselves deficient in patience, when we read some of the deliberate assertions of scientific men. They pronounce, as from the seat of power, and the centre of all the wisdom, in favor of this, and that, and the other, in the very teeth of a general and almost universal experience. We are compelled to place a very few of the solemn announcements, even of the great Liebig, in this category. He has proclaimed that bread is rendered unhealthy by being moistened with milk, and though we cannot at this moment cite his words, there is no doubt that he intends to teach this doctrine. Many of our journals have copied his language, and also the following, without comment, which we regard as, at least, a partial sanction of it:

Milk in Bread.—I have more objections than one to milk in bread, but the most serious is, that persons of advanced age, who are in the daily use of milk-made bread, will be expected to suffer from an over supply of osseous or bony matter, and particularly if their kidneys are affected. Bread should always be made with water, and when so made it is suitable for the aged and the young, the sick and the well. And as for sour milk, a microscopic view would, I presume, present additional arguments against its use.—*Water Cure Journal.*

Now, whatever may be said on this wise, we can not hesitate to pronounce the principle here inculcated, as a general proposition, in our opinion, utterly at variance with truth. We doubt not that there are persons, of all ages, who can not digest milk, even when diluted. We have seen infants in that condition. We are well acquainted with a very learned divine, who acquired an ability to indulge in the use of milk, in his maturer years, only by first diluting it very freely with water—perhaps nine parts water to one of milk. We have no doubt that these writers, to whom we refer, have met with such cases. But to pronounce that milk, in itself, is an unwholesome beverage, or a substance that demands of rational men, not moderation, but abstinence, is too ridiculous. What does the milk do to us, whether mingled in bread or otherwise, to make us dread it? Does it makes us too "bony?" We, who were brought up in the country, and who have used milk as drink, and in bread, and in various modes besides, shall not easily be led to admit that doctrine. We know of many more people who are apparently injured by meats than by milk, in bread or out of it; and our friend of the "Water Cure" is consistent in this, and forbids both.

Viewed in the light of "dietetics," why should milk in bread be unwholesome? Is it of doubtful expediency as a beverage? Who says that? And how is its nature changed when mingled in the bread? As a chemist, we venture to say, in nothing essential. Fermentation, when carried to excess, may affect portions of the milk, but it is not then unwholesome. Ask our Southern friends what they think of sour milk, of *bonny-clapper*. Why not eat bread moistened with milk before baking, as well as after? Is not bread and milk wholesome? Does "bread and milk" cause us to suffer from an "over-supply of osseous, or bony matter?" We have no patience with such science. "A microscopic view would, I presume, present additional arguments against its use." Indeed! And how is it with water? Does not a microscopic" view of that, too, "present arguments against *its* use?" We venture the opinion, that very few can view a drop of water before a solar microscope, and straightway go away and drink it. And how does a "microscopic view" affect the wholesomeness of vinegar? Friend *Water Cure*, vegetarian as you are, your logic is surely out of joint; for no one, of

any considerable experience in the use of optical instruments, can be ignorant that a microscopic view of vegetables would present millions and billions of "arguments against (their) use;" and nice, large, and plump ones, too. We doubt whether you will make much on either of these tacks.

We have lived for years on milk-bread, and wish those glorious days might return. And we are not very bony, nor troubled with the *animalcules*, so far as we know. Some of our family connexions have continued to live in the same style ever since, and they are not particularly bony. And when we visit "the spot where we were born," or its neighborhood, we always go back to these old habits, and eat our bread and milk, and milk-bread and milk, too; and we generally come back with less *apparent* symtoms of *too much bone* than we had before. We exhort our readers, one and all, who are not already diseased, or in an ab-normal state, to get and eat as much milk-bread as they can.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

SANDY SOILS—LONG ISLAND.

Messrs. Editors: I was pleased to notice, in your last number, an article over the signature of "L," calling the attention of your readers to Long Island and its neglected soil. It is truly remarkable that the lands of Long Island, so cheap, and so close to New-York, the best market in the world, have been suffered so long to lay waste and unproductive.

The chief causes, no doubt, are, that immense tracts have belonged to single families or individuals, and that cutting wood, catching oysters and fish, instead of farming, have long been the principal occupation of the inhabitants; and, at the same time, there has prevailed a mistaken opinion as the quality of the land and its fitness for agricultural purposes.

A gentleman of Islip informed me, not long since, that he had resided forty years upon a farm on the south side, which was very productive; but that the great body of the land, in the middle of the Island and along the railroad, was, until recently, considered worthless; but that he had put some under cultivation near Suffolk Station, and was surprised at the result; and from experience he found it superior to the old farm.

There is a very erroneous opinion generally entertained about porous soils losing the manure by percolation. A recent examination, by a gentleman of Long Island, of a barn-yard where the soul was porous, showed that the discoloration of the soil, underneath the barn-yard, had not extended but a little depth; and his opinion was that he lost but little of the strength of the manure by percolation.

It is a well known property of water, in passing through the earth, to part with all foreign matter held by it. Witness the purity of the springs on sandy or gravelly soil, and the operation of artificial filters, as seen on a small scale about our cities, and on a large scale in the water-works of London and other European cities. Is it not a popular error that the manures are lost by percolation?

May there not also be an error about the loss of manures by evaporation, when covered in the soil? Evaporation carries off the moisture, it is true; converts the water into steam, but how can anything except moisture leave the soil? If you evaporate salt water the salt is left; if sweet water—sap of the maple or juice of the cane—sugar is left.

There are some well known facts that bear on this subject. One is, that in very dry seasons porous soils suffer less than the close and clayey soils. This was the case on Long Island last year, which was a very dry one. Long Island suffered less than almost any other section of the country where the drought prevailed equally.

The sandy soil allows early ploughing and sowing, and if thus worked and properly manured the vegetation of the crop covers the soil before the sun renders the surface too dry. The air penetrates the open, porous soil, and at night deposits its moisture, with which on Long Island it comes richly laden from the ocean or the Sound.

I will venture to predict that Long Island is destined at no distant day to be a remarkably rich and productive agricultural country; or rather, that it will be one immense and teeming garden.

W. E. M.

NOTE.—Our correspondent is no doubt correct in his opinions above expressed in relation to the percolation of manures on the soils of Long Island. There are soils, however, which admit the passage of liquid manures through them without any apparent loss. We make this remark lest some of our readers should be led to suppose that we inculcate the doctrine that there is no soil where the application of manure, in its present condition, seems quite inexpedient. The subsoil has an important connection with this matter. We have before given some specific directions in regard to it. As to Long Island, we know that good farms have been made there, and that thousands of acres upon it, yet unimproved, could be made into fertile and paying farms.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

SPENT TAN AND SAWDUST FOR MULCHING FRUIT-TREES.

MESSRS. EDITORS: It may not be uninteresting to your readers to learn that spent tan spread on the surface of the ground, under a tree which has been recently transplanted, is one of its greatest protectors from drought. In the spring of 1853, we set a quantity of fruit trees in a gentleman's garden and fruit grounds. The soil was very dry and gravelly, and it was the common opinion that they all would die from the drought.

The ground was prepared for setting in our usual way, with the addition of loam to set the roots in. After setting the trees, the ground was covered to the distance of two feet from the tree with common sawdust. There was not one fruit-tree that suffered from the drought; and last season several of them bore and ripened fruit.

We set on the same grounds, also, about fifteen rods of arbor vitæ hedge. We mulched them also with sawdust, and there was not one failure.

Last June I set a quantity of arbor vitæ on a bank, close to a wall. I put about two shovels full of spent tan around each tree; and although they were set just as the extremely dry season commenced, not one of them died, although we did not water them.

Villages are frequently built on alluvial soil, and then it is often extremely difficult to make trees flourish. Those who wish to ornament their gardens will find that a liberal supply of sawdust or spent tan added to the soil, either by mixing with it or as a top dressing, is very advantageous.

Either of the above substances, which are usually considered worthless, and

can be had in abundance near all our villages, will many times pay the expense of hauling and applying. Adopt this treatment, and those trees which usually appear sickly in mid-summer will be of a darker hue, and their broad leaves will shelter you from the scorching heat of a summer's sun.

I have no doubt that near almost every country village sufficient quantities of sawdust and tan are wasted every year to top-dress the ground under five thousand trees.

Let me advise you, then, to apply it to your alluvial soils, and your villages will no longer have the appearance of being built in a desert, but rather in the luxurious soil and in the balmy climate of the Indies.

Plant trees and make them flourish, and then the weary traveller will admire your scenery, and will thank you for the rare pleasure which such scenes impart; while your own eyes constantly beholding the work of your own hands, you will daily and hourly find occasion to rejoice in the pleasing change.

L. H. SPEAR.

Brainton, Vt., Feb. 5th, 1855.

ROOT-CROPS.—THE NEW-ENGLAND FARMER AND "WE," vs. THE CORRESPONDENT OF THE NEW-ENGLAND FARMER.

WE are very happy to notice the commendation of the learned Editor of the New-England Farmer, with which he prefaces our article, taken from our journal, entitled, "The Value of Root-Crops." We are gratified at this for two reasons, one personal, and the other subjective. That is, we are glad to have his endorsement as to the importance of Root-Crops, and of having more light on the subject of fattening and muscle-producing food.

We are also glad to read the language quoted below, from a correspondent of the N. E. F., who seems disposed to find fault with something, or else to be troubled with what scholars call *cacoethes scribendi*—are thus glad, because we think if there was unfavorable criticism to be made on that short essay, this writer might have discovered it. But he represents us as taking a position we never have taken, and then attacks it. Whether he *carries* even that fiction, remains to be seen. Our language was as follows: "*We are inclined* to explain it (a certain fact) on the principle that concentrated nutriment is not so wholesome as that which is more diluted. The more diluted our food, provided we do not overtask the energies of the intestinal canal, in the conveyance of it to its destination, the better for the health of the animal. *May not this be the rule?* In such cases the absorbents have more time, and a better opportunity to possess themselves of what they need, without suffering anything to escape them. WE DO NOT ASSERT THIS. We only *suggest*, where no one appears to establish anything."

But out of this doubly-guarded enquiry and "suggestion," this correspondent, E. C. P., objects to us because—"among other objectional sentences, (sentiments?) I can not help noting the following: 'The more-diluted our food, provided we do not overtask the energies of the intestinal canal, in the conveyance of it to its destination, the better for the health of the animal.'

"Now this means, (says our critic,) if it means anything, that the less concentrated the food of animals,—that is, the greater proportion of bulk to nutriment,—the 'better for the health of the animal.' The writer does not

seem to perceive that, in carrying out his doctrine, he must inevitably run it "into the ground;" for it comes to this, that when food is discovered which contains no nutriment at all, it is better adapted than any other for sustaining animal life."

Really, this is singular logic. It reminds us of the so-well-known Paddy, who, on the assumption that the use of a stove would save half the fuel, proposed by buying two, to save it all. We can not seriously find fault with such logic, even if we had asserted what the learned E. C. P. says we have, but leave him in his glory; nor shall we enquire how he *can* "dilute" nutriment when there is none. It is not on account of such criticism that we notice this writer, but, because we would give our own readers to understand, that our opinions, as there expressed, are sustained by one of the best editors in the United States, and, also, to renew our exhortation to them to cultivate root-crops much more extensively, and to feed them to their stock quite freely. Every week, almost, we find accumulative evidence on this subject. We would not have the diet exclusively nor mainly such; nor can we go with this same E. C. P., of "Somerville," who commends "about sixty per cent. of nutriment to forty per cent. of bulk!" that is, that the nutriment (solid contents, of course,) should be fifty per cent. more than the bulk; for we are quite sure that far less than one hundred and fifty per cent. of nutriment would be quite ruinous to the health of animals. Rather than this, because cheaper, and the results the same, we would "buy two stoves," and save all—the cost of nutriment.

[We publish the following communication without any hesitation, although we are surprised at the statements made by the writer, in respect to exhibitors and committees. We have more to say on this subject, which we perhaps may put into form in season for the present number. But we wonder that any community should tolerate, for a moment, any approach to such practices as are described in the statements below. We must believe that such occurrences are very unfrequent.—Eds. P. L. & A.]

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

FAIRS AND HUMBUGS.

Although we are *said* to be fond of being *humbugged*, yet I apprehend that we may possibly overdo the thing, and become disgusted with it. In fact, there are some men who already have become so, and declare that all fairs are humbugs. The utility of fairs, in future, must depend on the manner of conducting them, and the character of the articles and stock exhibited in them, and the candor and honesty of the exhibitors and judges.

Few men who have been attendants on our fairs, have failed to notice the attempts at deception practised by exhibitors; in fact, it has become so common, that honorable men are hardly expected to be perfectly reliable in these matters.

The true friends of improvement have it in their power to prevent, in a great measure, these evils, if they will set themselves about it in earnest.

It may require some time and effort to remove these evils, but the advantages to be obtained are worth the effort. We cannot afford to lose the impulse that has been given to agriculture, and the improvement in stock

and agricultural implements by fairs, because these are not conducted as they should be, or because a few unprincipled men care for nothing but to advance their own interest by imposing upon the credulous.

When a man presents a sheep on exhibition, that a committee are confident was shorn *high stubble*, as it is called, which means, so shorn as to leave the wool one inch long at shearing; or paints them, so as to make them appear like black-tops, when they are not so, let a committee report what they believe to be the fact in a few such cases, and the effect will be felt as far as the case becomes known.

True, this would require some independence in judges, but that is what we ought to expect. If men have not that quality, they are not the men we want for those places, and they had better not serve in them.

Shall a committee say to the public that an article or an animal is worthy of commendation, when they are confident it is not so? Certainly not. By so doing, they inflict a great injury on the cause they are chosen to advance.

Let every honest man sustain truthful reports, and set his face like flint against impositions, and those that are guilty of such deception would abandon the fairs or their evil practices.

Although there is perhaps no other stock so liable to deceive as sheep, yet, by over-feeding and other ways they are made to deceive the buyer, the spectator, and perhaps the public.

In hopes that these few thoughts, imperfectly expressed, may do something to increase the utility of fairs, I leave them at your disposal.

W.

Ohio, Feb., 1855.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

WASTEFUL FARMING.

MR. EDITOR:—Each farm has within itself the means of its own improvement. Science of late years has done much to improve the most ancient of arts; still there is much left to accomplish. The field of investigation is still but partially explored. But there is, of late, a spirit of inquiry in most of our farming communities, as to the best system to be pursued for the improvement of the soil, which speaks for good.

There are but few pursuits that would suffer the loss and waste to which the farmer submits in manure, and other modes of wasteful management, without a failure. Our manure heap is our capital and bank of deposit. Here refuse of all kinds should be safely placed to be converted by the laboratory of Nature to some useful purpose. The farmer would be astonished were he to know fully how little the system of reproduction is understood.

There is an immense loss in not yarding stock in a proper manner, and supplying muck or turf to absorb the urine. Where barns have stood for years without a cellar under them, and, for several generations, the manure heaps have been deposited, all that is wanting is, that this soil be carted to the field. Here is one of the many means of improvement.

Again we can see a great advantage in the the change of soil, by carting from the most barren knoll soil of a different character. The most wonderful effects, sometimes, are thus produced. This process supplies to the soil that which was wanting for the formation of a perfect plant. Here, again, ac-

cording to my theory, we have within our reach the means of greatly adding to the amount of our crops.

The larger the crop, if judiciously managed, the larger the manure heap, and, on our system of reproduction, the better prepared for the next. By pursuing this system, our lands will increase in fertility from year to year.

Another great loss the farmer is subject to is from the wrong application of manure to his fields. Different soils require different applications; while the heavy, tenacious soil will require the manure on the top of the furrow, and the dryer soil that it be turned under. There can be no particular rules laid down on paper for the application of manure. The practical tiller of the soil must use his best judgment according to the nature of the soil, and the crop he intends to raise. On this subject our farmers need much light, which they should obtain by reading and experiment.

There is another large loss the farmer is subject to from the planting of a particular crop on the wrong soil. A particular crop planted in a particular location would prove a dead loss; while, by planting it elsewhere, it might drove a source of profit. Good cultivation will, generally, do much to insure a good crop. One acre, well cultivated, will be of as much actual profit as three, poorly done. It costs no more to cultivate one acre for a full crop than it does for a half a crop—the acre proving a profit, and three a loss; while, by a good cultivation, the value of the one acre is increased, and, by the poor cultivation, the value of the three is diminished.

We would not be understood to discountenance the purchasing of highly concentrated fertilizers. On the application of these, at present, our farmers need much light. But we would be understood that we do not make use of one-half the means within our reach for the improvement of our farms and crops, and have, therefore, no reason to find fault, or be disappointed, if such farming is not found profitable.

D. L. HARVEY.

DOCK RAILWAY, LIVERPOOL.—At the last meeting of the British Association, there was exhibited a large model of a high level railway, which it is proposed to carry along the east side of the whole line of docks at Liverpool. The construction will consist of iron frame-work supporting two platforms. The lower will be about 52 feet wide and 20 feet above the present quays, designed entirely for goods traffic, having four lines of railway—the two nearest the docks to be used as sidings for trucks while loading and unloading, and the other two as up and down lines for trucks in motion. The upper platform is to be about 28 feet wide, and to have two lines of railway, intended for passengers only. The lower platform will be provided with hydraulic cranes, which will transfer goods either from or to the vessels or the trucks, as well as work through the hatchways in the platform to the quays. The scheme embraces the construction of deposit and transit-sheds, a connection with existing or future railways, and with private warehouses, and the erection of passenger-stations. The great thoroughfares will be crossed by bridges, and the line will be equally applicable for horses or locomotive power. The cost is estimated at less than £250,000 a mile. This includes hydraulic cranes and platforms, with stationary steam power to work them. On the other hand, it is calculated that the value of the quay space gained by the platforms of the railway, at the low rate of £5 a yard, will yield a return of about £210,000 a mile, not much below the estimated expenditure.

HORTICULTURAL.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

THE CULTURE OF THE ROSE.

The Rose, on account of its exquisite sweetness and surpassing beauty, is often termed "The Queen of Flowers." Although there are some flowers which may have a more gaudy appearance; yet there is none which possesses so many excellent qualities as the Rose, and none so universally admired, or so generally cultivated. It is the universal favorite. No flower, either, is of more easy cultivation, particularly in the Middle, Western, and Southern States.

We can scarcely pass a house, however humble, without seeing one or more of the family Rose, within the garden or about the door. These, during the months of May and June, give a cheerful and an enlivening appearance to every thing around, and are calculated to drive dull melancholy from the most phlegmatic.

But why should the pleasure thus afforded be confined to the short season of a month or two, when it might, with little trouble or expense, be extended through eight or nine months in the year? In this respect, the Rose surpasses every other flower which can be grown in the open air. There are many varieties of this beautiful flower, which, under proper cultivation, will bloom profusely from early spring until late autumn. And who that has a taste for the sweet and the beautiful, would willingly forego this luxury of nature? This would argue, not only a want of refinement, but a want of taste for Nature's works.

Many persons, no doubt, are deterred from the cultivation of fine roses, from an apprehension that they are too tender for the climate, and require more attention than they are willing to bestow upon them. But this is entirely a mistake. The rose is much more hardy than many persons suppose. It will stand the winters of the Middle and Western States, uninjured, almost without protection. But as our winters are sometimes pretty severe, it is best to guard against this contingency by throwing around the root of the rose a little protection; and this will require not more than one minute's labor to the plant. I have found that to draw up the earth a few inches—say from four to six—around the root of the rose, is quite sufficient. Indeed, this is a better security than wrapping it up, and keeping it warm by putting manure around it. This keeps it too warm, and causes it to throw up tender shoots beneath the protection, which never fail to be killed when exposed to the air. There is more danger of killing roses by keeping them too warm than too cold during winter. They should be kept sufficiently cool to prevent them from vegetating until the frost is entirely over, and there is no danger. It is true, the tops may be killed, but this is no serious disadvantage. A rose must always put out a new growth before it blooms, even if the last year's wood should not be killed; and when the plant is killed down by the frost, or cut with a knife, it will throw up more vigorous shoots, and grow better, and bloom prettier, than if the old wood should remain untouched, either by the frost or the knife. It is a great mistake to suppose that, because the rose has been bitten down by the frost, that it is killed, or even injured. Protect the root, and what is called the neck, or collar of the plant, and there is no danger. I have had, growing in my garden, in the open ground, for several

years, all the varieties of the ever-blooming rose, such as the Tea, Bengal, Noisette, and Bourbon, and have never lost one by the cold weather, when protected as I have described.

A good deal has been said on the different methods of propagating the rose—whether it should be on its own roots, or on a foreign stock. Each method, no doubt, has its advantages and disadvantages. Some will do best when budded on a good thrifty stock; others, perhaps, will succeed better on their own roots. There is a very general prejudice existing against budding roses. There are two objections urged against it. One is, that the bud is often inserted so high up on the stock that it cannot be protected, and consequently is killed by the frost. There is great weight in this objection, and I would advise my friends never to purchase a rose that has been budded some distance above the ground, particularly if it belongs to any of the tender families. A rose should always be budded as near to the surface of the ground as possible; and then, when transplanted, the point of inoculation should be placed a little below the surface, and this point being protected during the winter, there is not the least danger of its being killed. Sometimes, when planted in this way, roots will strike out from the bud, and then it will have a double advantage.

Another objection to budded roses is, that the stocks are apt to throw up suckers, which not only prove troublesome, but often draw the nourishment from the rose. This, it is admitted, is sometimes the case; but it is very easy to distinguish between the two, and the suckers should always be removed as soon as they make their appearance.

I have had considerable experience on this subject, and can say, that in many respects I prefer a rose budded on a hardy, strong-growing stock. It is hardier, more thrifty, and blooms better. I have frequently lost roses in the winter when on their own roots, although protected; but never when budded. The reason is obvious: for when the top of a rose is tender, the rest is so too, in the same proportion; and when a tender rose is on its own roots, and the top should be killed, the root is very apt to be killed also. But I find the prejudice against budded roses is so deeply rooted in the minds of some people that no reasoning will remove it; and the old adage is verified,

"Convince a man against his will,
He's of the same opinion still."

Well, I suppose we must use another old adage, and say,

"What can't be cured
Must be endured."

I have sometimes been amused at persons when they would come into my garden; they would exclaim, "O, what pretty roses!" and earnestly inquire, "Why is it that your roses bloom so much better than mine?" "O," I would answer, "it is because mine are *budded*." I would then give my reasons for believing a budded rose was better than one on its own roots; and although they seemed to be convinced of the truth of what I said, yet, when asked which they would prefer, "O," they would say, "they never intended to have a budded rose!" Thus you see it is of no use to reason with some persons.

The rose requires a strong, rich soil to bring it to perfection. If it is not *naturally* rich, it must be made so. I have found that *alluvial* soil, with a portion of sand, is well adapted to the growth of the rose; so also is well rotted chip manure, leaf mould, or rich virgin soil from the woods. It is of service to take up a rose every three or four years, and transplant it, trimming the roots, and renewing the soil about it. This seems to give it new life and

vigor. The surface-around should be kept loose, and clear of weeds. I have also found that *mulching* is of great service, particularly in summer. It prevents the too rapid evaporation of the moisture, and keeps the ground in good condition around it.

Roses should be kept well pruned. All the dead and sickly-looking branches should be removed, and a proper shape given to the plant. This not only improves it in appearance, but makes it more thrifty, and increases its blooming qualities.

Nothing has a more beautiful appearance than a garden with roses of different hues richly arranged in it. It seems to impart a cheerfulness to everything around it. A garden is a pretty good index of the character of the inmates of a dwelling; and I have often thought that I could determine, with a good deal of accuracy, respecting the industry, good taste, and refinement of a family, by taking a peep at the garden as I passed by their house. It requires but little time or trouble to plant a few trees in a yard, or a few flowers in a garden, and the pleasure thus afforded will more than balance the trouble and expense of doing it. Besides, this greatly increases the intrinsic value of a place, and if a man wished to sell, he might expect to get more for a place thus improved and ornamented, than he could get if there were no such improvements.

A taste for these things should be encouraged in children—particularly in females. The cultivation of flowers is particularly adapted to young ladies. Indeed, I have thought that a female without a taste for the beauties of Nature, was destitute of at least one distinguishing trait of female character.

To cultivate flowers is not only a pleasing employment, but it conduces greatly to health. We know that a beautiful garden will attract the attention of females, and bring them out to the open air when they could not be induced to leave their room were there no such attraction.

J. R. B.

Rosemont, near Nashville, Tenn.

THE GROUPING OF ROSES.

[We find in the *Courier*, published at Louisville, Ky., the following advice in reference to the grouping of this splendid variety of plants in the embellishment of grounds. We are not familiar with all these varieties, but we know many of them to be as described, and we give the entire article a place in our journal, as the opinion of a professed florist, who appears to understand what he writes about.—Eds. P. L. & A.]

In our paper of Saturday, we endeavored to point out the rewards that may be gained by a proper grouping of roses, and we promised to give some aid towards this enjoyment by giving a list of such roses as may be relied upon for this object. Those who carefully study the whole subject may give an infinite variety of effects by a judicious grouping. But we proceed to the names and characters of roses for the purpose we have indicated:

We begin with the *Remontants or hybrid perpetual Roses.* These should be the favorite of the garden. They grow luxuriantly, bloom freely through the season, have a variety of colors and a delightful fragrance. Among the preferable ones of this class, we rank the following:

Baronne Prevost—Bright red, and very large.

Cornet—Bright rose color, with odor of the Cabbage Rose.

Duchess of Sutherland—Light pink color, and ranked by the rose fanciers of France as among the first.

Geant des Batailles—Brilliant crimson, superb in size and appearance, and deemed nearly perfect by rose fanciers.

Jacques Lafitte—Deep brilliant rose color, and a splendid flower.

La Reine—Brilliant glossy rose, large and superb. This is a prime favorite with rose cultivators.

Madame Laffoy—Dark crimson, very brilliant, large and splendid.

Marquise Bocella—Pale blush, dwarf.

Mrs. Elliott—Bright lilac, crimson.

Prince Albert—Rich velvetty crimson, one of the most beautiful of the whole family of perpetuals. We have never seen any Remontant rose that we preferred to this. We are glad to see that it is becoming a denizen of Cave Hill Cemetery. It will be a beautiful gem in that city of the dead.

Rivers' Perpetual—Is another great favorite of those who know the merits of the Remontant roses. Its colors are very rich, and it is quite a prolific bloomer.

Sidonie—A brilliant rose color, very perfect.

William Jesse—Light crimson, lilac tinge, large and very beautiful.

The name *Remontant*, meaning to grow again, indicates the character of this variety. A succession of blooming periods may be looked for from the Remontants. The perfection of the foliage, variety in the colors of the petals, in the shape and size of the flowers, and the delightful fragrance of the Remontants have made them welcome guests in every flower garden.

Bourbon Roses.—The Bourbon Roses are well called ever-blooming plants. They richly reward the cultivator. We name a few choice specimens:

Leveson Gower—This is esteemed equal to any of the Rose family. It is very large and double, and of a deep rose color. It is equal in form to the Souvenir de Malmaison, and that is merit enough.

Hermosa—This is an old variety, but none of the new favorites have been able to displace it. The flower is cupped, very double and perfect, and the plant is one of the most prolific of bloomers; color, a very delicate rose.

Queen of the Bourbons—The most indifferent person could not pass this plant in bloom without pausing to do homage to its beauty. The flower is a delicate fawn color, cupped beautifully, very fragrant, large, and its rich glossy appearance makes it resemble wax-work. No group of roses can be complete without it.

Souvenir de Malmaison—We are sure that no one who has properly cultivated this rose ever hesitated in putting it at the very head of all roses. It is perfect. The foliage is unsurpassed in richness, the flowers cupped, perfect in form, very double, with thick velvety petals. The flower is the largest of all the roses, but its petals are compact and shingled with perfect regularity. The flowers are often from four to five inches in diameter, and their color is an exceedingly delicate blush, tinged with cream. It is one of the most prolific of bloomers, one of the earliest in the spring, and one of the last of the autumnal bloomers. This is a deserved favorite in Cave Hill Cemetery, and it flourishes there in all its perfection.

Raymond—A deep pink, tinged with purple.

Emile Courtier—Four cupped, double and perfect, and color a deep rose.

Enfant d' Ajaccio—A rapid grower, making shoots from twelve to fifteen feet in length. Flower double-cupped, very fragrant, and a brilliant scarlet crimson.

The Bourbon roses properly grouped with the Remontant family, and well cultivated, would be the pride and glory of any grounds, and we hope to see Louisville extensively ornamented in this way. But the means of grouping are not yet complete.

The China or Tea Roses are essential to a tasteful grouping of the plants. These, like the Remontants and Bourbons, have perfections of their own. We name such as will aid in making charming groups. They are peculiarly adapted to bedding out upon a lawn, but also make rich pillar roses. An Englishman, living in Rome, made a number of rose arcades, called Pergoles, which he ornamented with the China rose. Andot, who was entranced with the splendor of the beauty, says: "It is impossible to conceive a more splendid bloom than that of these roses trained upon pergoles so graceful. The foliage was hidden under the gorgeous drapery of the glittering roses."

The China roses should be kept free from weeds, and young shoots should be kept pegged down, in order to make masses of foliage and bloom of every variety of tint. Parsons, in his great work on the Rose, speaks commendingly of the adaptation of the China rose to the terraces of grounds. The slopes should be planted with dwarf China roses, the shoots of which should be pegged down. A magnificent mass of brilliant and various bloom will reward the labor. But to the varieties.

Adam—Flowert cupped, double, very large, and perfect in form; color, rich glossy rose.

Agrippena de Cramoise—One of the oldest, but the principal favorite of this class. It is beautifully formed, and its rich crimson color is unsurpassed. It is hardy, and a prolific bloomer.

Devoniensis—A beautiful flower of immense size; color, a fine creamy white. The flower bud is the most beautiful of all with which we have any acquaintance. The odor is very rich.

La Sylphida—A pale yellow, and very beautiful.

Barbat—Fawn colored flower, and superb.

Niphetoes—Large pure white, very splendid.

La Pactole—Form of flower, cupped; color, pale sulphur; centre, deep lemon yellow. An abundant bloomer, and quite hardy.

Saffrano—The half opened bud is one of the gems of floral beauty. It is a rich fawn color. Of all the fawn colored roses this is the most beautiful.

Souvenir d'un Ami is ranked by rose fanciers as the queen of tea-scented roses. It blooms freely, and its large imbricated flowers resemble those of the Malmaison; color, a delicate crimson, shaded delicately with rose tints.

Triumphe de Luxembourg—An old but still a favorite variety. The plant is of luxuriant growth, the flowers of immense size, rose and buff color, and very fragrant.

Noisette, or Climbing Roses.—*Ami Vibert*—A small fragrant, perfectly double, pure white flower.

Belle—White, with rosy centre.

Fellenberg—Very prolific, bright crimson flowers.

Jaune Desprez—Bright fawn color, and one of the most fragrant of all the tea or Bengal roses.

Ophire—Bright salmon and fawn colored flowers; one of the most beautiful of its class.

Monstreuse—A fine blush, and a capital rose for pillars.

He that may study and cultivate these varieties will obtain rewards and gratifications from which he will not be willing to part. And it must be remembered that a perfect feast of rose pleasures cannot be enjoyed without having members of the four classes we have described to-day.

THE TRANSFER OF BEES.

Mr. Eddy gives the following information, with directions, in the Puritan Recorder, in reference to this subject. We think he understands the business as well as any man:

"The reasons for a transfer are:—1. The leaky condition of the hive; 2. The bad condition of the comb. 3. The presence of the Bee-Moth. When a transfer becomes necessary, and is decided upon, the method of performing the operation is as follows:—1. Close the Bee entrance with cotton batting; 2. Nail a thin piece of board over the same; 3. Slide a zinc plate, or its equivalent, between the bottom board and the base of the hive; 4. Invert the hive with the bottom board held in place; 5. Remove the bottom board; 6. Set the new hive upon the zinc plate; 7. Adjust the hives so that no Bees can escape when the zinc plate is removed; 8. Withdraw the zinc plate; 9. Rap smartly upon every side of the hive, for twenty or thirty minutes, until the Bees are thoroughly routed, and nearly all of them have ascended into the new hive; 10. Slide the zinc plate between the two hives; 11. Set the new hive precisely in the place of the old one; 12. Remove the zinc plate upon which the new hive stands.

The operation is now complete, with the exception of a very few Bees which remain in the old hive. These are now to be drummed out, at a short distance in front of the new hive, and they will return to the familiar spot. I choose to perform the operation in the after-part of the day. Care should be taken that the Bees which are to be transferred, should occupy a stand by themselves. This is a matter to be attended to early in Spring. One prime object of the transfer is to get rid of the black comb which is no longer suitable for use. Of course I do not transfer this comb to the new hive. I lose, and expect to lose, the young which are found in the brood comb, at the time the transfer is made. For this loss, I receive more than an equivalent in the new circumstances of prosperity in which the colony is placed. The transfer should usually be made in the month of June. I prefer about the middle of the month. If it is done later than this, sufficient winter stores may not be secured. For further particulars, relative to Bee management, I would refer your readers to my book on "Bee Culture;" a copy of which will be sent to individuals, free from postage, who may forward to my address nine letter stamps."

New Mordant in Dyeing.—A Swede named Rydin, has published a method of obtaining a fine blue, of excellent tint, for cotton, by employing as a mordant the oxyd of chromium, dissolved in an acid; in place of this oxide, a double salt may be used, such as the double sulphate of chromium and potash. This salt is obtained by mixing one part of a solution of bichromate of potash, and one part and a half, or two parts, of sulphuric acid. Alcohol, sugar, or any other substance capable of converting the chromic acid into an oxyd of chromium, may be added. The oxyd is added to a decoction of logwood, and the dyeing may be effected in one operation, by putting together the salt, the decoction, and the cotton, and heating the whole. Or the cotton can be treated with the salt, hot or cold, and may then be placed in the decoction until the desired color is obtained. By varying the proportions of the salt to the decoction, very delicate shades of gray and lilac may be obtained.

THE HORN AIL.

The notion that this was a specific disease has long been denied by skillful surgeons and doctors. The opinions now prevalent, which are deemed worthy of confidence, are well given by Dr. Dadd, in his remarks at a late legislative agricultural meeting in Boston. He remarked, that Veterinary science had been too long neglected in this country. He commenced practicing the Veterinary art some twelve years ago in this city. There were many who pretended to prescribe for diseases of animals, without knowing anything about them, and would commence some very funny operations.

They would examine the horns, and would sometimes bore into them, and, perhaps, let out a little pus, if they found the horn cold.

He considered, however, that heat or cold on the surface were only *symptoms*. If the surface was hot, the circulation of the system was active; if cold, the reverse was true.

There was communication from the horn to the nares, or nostril, and any pus in the horn would, of course, run down through the nostril instead of upwards into the horns!

Sometimes this might become tenacious, so as to stop the passage. Then it was requisite to steam the nostril to make it run down. By penetrating the living membrane, or by admitting the atmospheric air by boring, inflammation was apt to ensue.

He maintained there was no such disease as "horn ail." Has examined animals said to die of horn ail. Has found a softening of the brain. And this arises often from an improper condition of the stomach. Many diseases of the brain originate in the stomach.

He has some fine anatomical preparations of horns which he invites people to examine. There is a perfect channel to the tip of every horn. There are longitudinal divisions of the horn, and if, in boring, the gimlet hits one of the partitions, it appears to be solid. If it chances to go between two of these partitions, it would appear to be hollow.

The cold horn is really only a circumstance indicative of the state of circulation in the system.

He was called to see a cow that had been driven ninety miles. Some of the neighbors guessed she was constipated, and gave her a pound of salt per day for three days in succession. No effect was produced, and another advised thirty-six drops of Croton oil. A third caused a quarter of a pound of gunpowder to be given. If some matches had been given with the gunpowder it might have been heard from!

He found the cow groaning, and recommended ending her misery at once by killing. This the owner would not do. The cow died in a few hours, and he found all these nostrums in her paunch.

Now if medicine be turned down a cow's throat very slowly, almost imperceptibly, the animal has the power to send it, and will send it, to the real digesting stomach. It must be poured very slowly to get to this second stomach, otherwise it goes into the paunch where it can do no good. The stomach of the horse is quite different.

It requires skill and science to prescribe properly for a dog or a horse as well as for a man.

Many die of flatulent and spasmodic cholic. The intestines appear as if knotted up. Without knowledge this cannot be cured. The seat of the disease is in the nervous system. There are two sets of fibres in the intestine,

the longitudinal and the circular. The contraction of these makes a mechanical obstruction, presenting this knotted appearance, and leaving the passage hardly as large as a goose-quill.

He contends that animals perspire as we do—that a great deal of matter passes off by the "insensible perspiration." Hence we should rub them to promote circulation on the surface and prevent congestion.

Kindness to cows is requisite. They do not return all the food from the ruminating stomach; only the coarser parts.

The Alderneys are very nervous. It annoys and injures them, especially, to be ill-treated. Indigestion is the result.

BARBADOES TAR FOR HORSES.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

Messrs. Editors: When I first tried my luck as a physician, I had in my possession a gallipot of Barbadoes tar, which I had purchased of the executors of a deceased physician. They did not know what the article was, and I kept it a long time before I knew. The first use I made of it, was to apply it to my horse's tail, after pricking; it relieved the soreness to the extent, the tail might be turned over the back, and the horse would not move, which was an indication that the movement of the tail was not painful.

It may not be known to every one, that Barbadoes tar, or rack oil, is the principal ingredient in British oil, and oil spike. The oil from Seneca Lake, N. Y., is an inferior article. In preparing this ingredient for use, I melt the tar with an equal quantity of lard, *mixed well.*

Any person who will make a trial of the above, will derive a benefit. The flesh of the horse is of a dry, inflammatory nature, and it is difficult to promote a discharge of pus; and this article will promote this discharge more effectually than any other article known to me. When this point is attained, the inflammation will cease, and the cure is much facilitated.

A. Hunton.

Hyde Park, Vt., Feb. 11, 1855.

CHLOROFORM FOR ANIMALS.

Dr. Jackson, of Boston, the first discoverer of the value of ether in surgical operations, commends the use of a mixture of ether and chloroform in operations on domestic animals. This mixture may be conveniently inhaled by the animal, by wetting a sponge with it, and placing it on a basket or muzzle, to be attached to the head, in the same manner as teamsters often feed their horses with provender. The sponge should first be saturated with water, squeezed dry, and then the mixture, one part of chloroform, and four parts of ether, mixed in a bottle, may be poured upon the sponge as required, supplying it anew as it evaporates.

This mixture Dr. J. regards as a safer application than ether alone. He has never known a fatal accident from its use, where it was inhaled in connection with atmospheric air. The latter is necessary in inspiration to sustain the functions of life. Animals which perspire freely will bear strong doses, while it should be given very cautiously to cats, dogs, etc. The Dr. commends its use in shoeing refractory horses.

VALUABLE STATISTICS.

We select the following useful tables from the volume recently prepared by Mr. De Bow, from the census returns. The title of each table explains its special design. We shall probably have occasion to refer to them hereafter.

Land actually cultivated in the several Crops of the U. States, 1849–50.

Products.	Acres.	Products.	Acres.
Indian Corn	31,000,000	Tobacco	400,000
Meadow or pasture lands—that proportion which is regarded improved, and exclusive of Hay crop	20,000,000	Sugar	400,000
		Barley	300,000
		Rice	175,000
Hay	13,000 000	Hemp	110,000
Wheat	11,000 000	Flax	100,000
Oats	7,500,000	Orchards	500,000
Cotton	5,000,000	Gardens	500,000
Rye	1,200,000	Vineyards	250,000
Peas and Beans	1,000,000	Other products	1,000,000
Irish Potatoes	1,000,000	Improved but not in actual cultiva'n.	17,247,614
Sweet Potatoes	750,000		
Buckwheat	600,000	Total improved lands	113,032,614

Imports of several leading articles into the U. States, 1821–1853.

Years.	Cotton manufactures.	Woollens.	Linen manufactures.	Silk manufactures.	Coffee.	Sugar.	Tea.	Specie and bullion.	Iron and steel manufactures.
1821	$7,589,711	$7,437,737	$2,564,159	$4,486,924	$4,489,970	$3,553,895	$1,322,636	$3,064,900	$1,868,529
1825	12,509,516	11,392,254	3,887,787	10,290,743	5,250,82-	4,232,663	3,728,935	6,150,765	2,706,416
1830	7,862,326	5,766,396	3,011,280	5,932,242	4,227,021	4,630,922	2,425,018	8,155,964	3,655,848
1835	15,367,585	17,834,424	6,472,021	16,677,547	10,715,466	6,806,425	4,522,806	13,131,447	5,351,616
1840	6,504,484	9,071,184	4,614,466	9,835,757	8,516,222	5,781,428	5,427,010	8,882,813	3,184,900
1843	13,863,282	10,666,176	4,923,100	9,928,411	6,243,532	4,780,720	5,761,788	4,070,242	5,077,788
1850	20,108,719	17,151,509	8,134,674	19,596,858	11,234,835	7,558,554	4,719,232	4,628 972	7,078,603
1851	22,164,442	19,507,309	8,793,742	28,026,268	12,851,070	13,845,940	4,708,005	5,453,592	8,182,438
1852	19,689,496	17,573,694	8,515,709	23,609,279	14,474,900	14,748,359	7,285,817	5,505,044	8,048,618
1853	27,731,313	27,621,911	10,236,037	33,048,542	15,564,590	14,993,003	8,224,853	4,201,382	7,838,791

Exports of certain leading articles from the U. States, 1821–1853.

Years.	Cotton.	Tobacco.	Specie.	Rice.	Flour.	Fish.	Manufactures.	Lumber.	Beef and pork, cattle & hogs.
1821	$20157,484	$5,648,962	$10478,059	$1,494,307	$4,208,043	$973,591	$2,584,916	$1,822,077	$2,052,439
1825	36,846,649	6,115,623	8,797,065	1,925,245	4,212,127	1,078,773	5,417,978	1,988,220	2,763,144
1830	29,674,883	5,586,365	2,178,773	1,986,824	6,085,952	755,677	5,320,980	2,054,289	2,032,928
1835	64,961,302	8,250,577	6,477,775	2,210,331	4,394,777	1,068,534	7,394,075	3,402,924	2,415,493
1840	63,870,307	9,883,957	8,417,014	1,942,076	10.143 615	720,164	9,873,462	2,926,846	2,818,267
1845	51,739 642	7,469 819	8,606,495	2,160,456	5,308,593	1,012,007	10,329,701	3,099,455	4,918,093
1850	71,984,616	9,951,023	7,522,994	2,631,557	7,098,576	456,794	9,992,144	4,493.658	2,155,895
1851	102,315,317	9,219,251	29,472,752	2,170 937	10.524,331	481,66	21.296.498	4,630,206	6,057,973
1852	87,965,732	10,021,233	42,674,135	2,470,029	11,869,143	453,010	19.987,430	4,991.184	5,265,899
1853	109456,404	11,319,319	27,486,875	1,657,658	14,763,394	461,016	22,721,660	4,996,014	8,416,878

Commerce of the U. States with several Foreign Nations, 1790–1853.

Years.	Great Britain and dependencies.		France and dependencies.		West Indies generally.		Netherlands and dependencies.		Hanse Towns.	
	Imports.	Exports.	Imports.	Exports.	Imps.	Exp'ts.	Imports.	Exports.	Imports.	Exports.
1790		9,246,562		4,668 902				47,240		476,050
1795	30,972,215	9,218,540	20,288.013	12,653,635	85,186	1,543.348	3,699,615	2,884,817	1,663.433	2,655,594
1800	42,577,580	27 310,289	9,644,323	5,163 833	26,937	115.631	7,132,627	5,669,016	4,998,975	5,012,846
1805		25,047,386		21,072,747		3496 947		17,835,216		3,232,508
1810		16,555,488		137,630		389,931		174,078		1,136,382
1821	29,277.938	26,522,272	5 900 581	6,474.718	3,727	560,513	2,934,272	7,688.336	990,165	2 591,275
1830	26,804,984	31,647,881	8.240 885	11.806,238	7,386	247,121	1 356,765	4,502,437	1,873,276	2 274,580
1840	39,130.921	70,420,846	17 908,127	22 349,154			2,826 896	4,546,085	2,521,493	4,198,159
1850	85,117.477	88,388,675	27.636,265	20,183,094	9,417	67,934	2,733,560	3 571.607	8,787,874	5,206,522
1853	113,219,260	145,553,624	33,525,999	27,044,479		98,125	2,594,619	2,979,332	13,843,455	8,020,053

Years.	Russia.		China.		Spain and dependencies.		Mexico.		Columbia, C. America, Brazil, Argentine, Conf. and Chili.	
	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.	Exports	Imports.	Exports.
1790						1.989.421				
1795	1,168,715	66,221	1,144,103	1,023,242	3,942,445	4,714.864				
1800	1,524,995		4,613,463	1.047,385	16,071,918	15.660.806				
1805		71.372		322,075		12,672,768				
1810		3 975 098		319.479		14,941,942				
1821	1.852,199	628 894	3,111,951	4,290,560	9,653,788	7,218 265				
1830	1.621,899	416,575	3.878,141	742,193	8.373,681	6 049,051	5,235,241	4,837,458	5,528 856	4,756,347
1840	2,572.427	1,169,481	6,640,829	1,009 966	14,019,647	7,617,347	4,175,001	2,515,341	9,093,988	5,891,478
1850	1.511.572	861,941	6.593,462	1,605.217	15.804,748	9,931.240	2,135,366	2,012,827	16,533,496	9,121,925
1853	1,276,501	2,456,653	10,573,710	3,736,992	26,030,320	11,847,101	2,167,9-5	3,558,824	22,280,979	8,577,121

HOOF-BOUND.

Dr. Dadd gives the following directions for this disease: "In all cases, we must endeavor to give the frog a bearing on the ground; and, in order to do this, the shoe ought to be removed. A dry, brittle, and contracted hoof may be improved by repeated poulticing with soft-soap and rye-meal, applied cold. So soon as the hoof softens, let it be dressed, night and morning, with turpentine, linseed oil, and powdered charcoal, equal parts. Yet, after all, a run of grass in a soft pasture, the animal having nothing more than *tips* on his feet, is the best treatment. A very popular notion exists, that cow manure has a wonderful effect on a contracted hoof; but it is the candid opinion of the author, and no doubt the reader will coincide, that filth and dirt of every kind are unfavorable to healthy action. Such a remedy, aside from its objection on the score of decency, savors too much of by-gone days, when live eels were sent on an errand down horses' throats to unravel their intestines. If any benefit belongs to such an objectionable application, it is due to the property it possesses of retaining moisture; therefore, cold poultices and water are far superior. Clay and moist earth, placed in the stall for the horse to stand on, are far inferior to stuffing of wet oakum, which can be removed at pleasure. In order to keep it in contact with the sole, we have only to insinuate two strips of wood between the sole and shoe; one running lengthwise and the other crosswise of the foot. It affords considerable pressure to the foot, is cooling and cleanly, and is far superior to the above articles."

BIOGRAPHY OF EMINENT MEN

ERASTUS BRIGHAM BIGELOW.

The subject of this notice was born April 2d, 1814, in West Boylston, a small town of Massachusetts, seven miles north of Worcester. His father had a little farm, to the toils of which he added, with Yankee versatility, the business of a wheelwright and that of a chair-maker. The boy was sent, of course, to the district school. At the age of eight he asked his master to put him into arithmetic and writing, but he was pronounced too young for these high branches. He was not, however, to be headed off so. He took up Pike's Arithmetic at home, performed, unassisted, every question as far as the Rule of Three, and made a fair record of the whole. Who does not see in this a promising outset?

But his school and his arithmetic engrossed only a fraction of his time. His boyish activities showed early a mechanical tendency. With minute fence of regular post and rail he inclosed a few yards of ground. This was *his* little farm. There might be seen a plough, a cart, a wagon complete in every part, with other implements of husbandry, all of his own making, and of a size to match. His live stock was a litter of kittens. To carry out his idea, he must set them to work: a yoke was made, and two of these small steers were attached to the cart. Finding that they insisted on pulling backward, he turned their heads toward the cart. The wheels now went forward, but the team could not be guided; the experiment consequently failed.

Not content with being a farmer and a wheelwright, he went into the chair line. Having made a chair-back, he so finified it with paint and bronze and gold, that folks looked on with wonder, and predicted that the boy was destined to become a great painter.

He contrived to get a violin, and it was not long before he could execute with facility the then popular airs of "Bounding Billows," and "Away with Melancholy." This was a new phase. His career, evidently, was to be a musical one. Kind neighbors even suggested that he might hope ere long to find high and profitable employment in the orchestra of the Boston Museum, consisting at that time, if we remember rightly, of a fiddle and a hand-organ.

John Temple, a neighbor of Mr. Bigelow, was a substantial farmer. He had noticed the lad's capacity, and sometimes jokingly asked him to come and live with him, and learn *his* occupation. Erastus regarded this proposition as a business matter. With him, an offer was an offer. Accordingly, one Monday morning in early spring, this boy of ten years presented himself at Mr. Temple's door and demanded employment. It was given him, with no expectation that he would continue through the day. He worked on, however, and at the end of the week suggested to Mr. T. that it would be proper to come to some understanding in regard to wages. On being asked his terms, he offered to work six months on condition of receiving at the close, a cosset lamb called "Dolly," to which he had taken a strong liking. The moderate demand was of course acceeded to. But scarcely had a month elapsed ere a difficulty arose. Dolly could not live without eating, and how was he to provide for her? His fellow laborers discovered the cause of his anxiety, and teasingly aggravated it. At length he proposed and effected

an alteration in the contract. He relinquished his claim to Dolly, and Mr. T. agreed to furnish, instead, a pair of cow-hide boots, and sheep's-gray cloth sufficient for a suit of clothes. The agreement was fully carried out on both sides. At the close of the period, an offer of four dollars a month for the ensuing summer was made and accepted. The kind-hearted man, at parting, gave the young farmer a silver dollar.

During the next two years he continued to work for Mr. Temple in the summer, and to attend school in winter. The farmer urged him to stay till he should be of age, and he offered to do so if, at the close of the term, he could receive in compensation a small outlying farm belonging to his employer. Fortunately, this offer was declined. It was an escape not unlike that of Daniel Webster from the clerkship of the county court.

In 1827, Mr. Bigelow removed to another part of the town, and engaged in the manufacture of cotton yarn. Erastus was set to work in the mill. So long as he found anything to study in the machinery and its working, he was interested; the occupation then became distasteful. While employed in this drudgery of tending spindles, he was busy in framing plans for the future. His grand desire was to obtain a liberal education. As his parents, from their limited circumstances, could not encourage him in this, he began to consider in what way he might accomplish the object himself. He already knew how to earn and to save. He had not only clothed himself by his toil, but to his first silver dollar had added several more. Like Goldsmith, he now turned his musical talents to account. In a community where critical connoisseurship was unknown, he passed for an accomplished performer. At all balls and dancing parties for many miles around his services were in request. After a long day of spinning, how tedious must have been a whole night of fiddling! Often, doubtless, his eyelids grew heavy and his arm a-weary. Who can think of the motive which nerved that arm, without respect for the young violinist?

About this time he made his first invention. It was a hand-loom for weaving suspender webbing. It accomplished the object; but as the business would not justify the employment of an operative, he abandoned it, after realizing from it a few dollars. His next invention was of more importance. A ball of cotton cord, known in the market by the name of "piping cord," had been brought into the house for domestic use. On examination, he found it to be of yarn like that which he was spinning every day. On inquiry, he learned that it was made by hand, in the ordinary rope-walk. He was sure that it could be formed more expeditiously and cheaply by automatic machinery. In a few weeks he had matured the plan of a machine, and within two months he had it in successful operation. It worked well—earning for the youthful inventor in the course of a year about one hundred dollars. At length the article fell greatly in price, and the working of the machinery was abandoned.

These first developments of a peculiar genius were evidently called forth by his burning desire for an education. They were temporary expedients to enable him to pay his way. It should not be forgotten that they were the achievements of a lad only fourteen years of age. Having now by his industry and ingenuity acquired a small fund, he obtained parental consent to attend a neighboring academy, at his own expense. This was in 1830. Here he entered on the study of Latin. His teacher was pleased, and wrote to the father, recommending a collegiate course for the boy. But to the cautious parent, a trade seemed safer and better. As the son preferred not to engage again in the dull employment of the spinning mill, the matter was

compromised, and he was told that he might go to Boston and become a commission merchant, if he could.

To Boston accordingly he went. He carried no letters—knew no one. After a few inquiries from door to door, he found employment in the wholesale and retail dry-goods establishment of S. F. Morse & Co. The firm was highly respectable, and the place was deemed a good one. But the charm of novelty was soon over, and then the occupation of measuring and selling ribbons and calicoes seemed petty and monotonous. He felt, he knew, that he was made of something beyond *that*. The idea of a college course still haunted him. On one occasion he walked out to Cambridge, and had a talk with President Quincy. It only served to show that there was no chance yet for him.

About this time a teacher of stenography came to Boston and gave lessons in the art. He drew much attention and formed large classes. Our young clerk shared in the general interest, but the cost of a course (ten dollars,) was beyond his means. So he got some books and taught himself. He was surprised to find the art so simple. In a few days he could write with ease in short-hand. A new thought struck him. If *he* could learn stenography in this way so quickly and easily, why should not others—why should not many avail themselves of the useful, labor-saving process? The rareness of the acquirement must be owing to the expense. He would obviate that. He would write a book on short-hand, illustrated by plates, and filled with rules and examples. Energetic and industrious—to resolve, with him, was to act. In a short time his work—"The self-taught Stenographer"—was ready for the press. To prosecute this new enterprise, he relinquished his post behind the counter, much to the regret of his parents, who naturally questioned the expediency of the step, and to that of his employers, too, whom he had fully satisfied.

Having printed a small edition of his work he became his own bookseller, and in ten days sold seventy-five dollars' worth in Boston alone. This greatly encouraged him. Forgetting that Boston was peculiar and prepared ground, he regarded his sales there as an exponent of the national demand, and immediately ordered a large impression of the work. To meet the extensive business now opening upon him he took a partner, a medical student, who was anxious to see a little of the world before he settled down as a professional drudge. The young doctor was to pay the entire cost of printing, to share equally in the labor and expense of distribution and sale, and to receive one-half of the profits. These hopeful adventurers set out at once upon their commercial travels. They visited the most inviting portions of New-England, New-York, New-Jersey, and Pennsylvania. Here the cholera, then on its first terrible march through America, put a stop to their journeyings. They went home, having made about a hundred dollars. Four hundred dollars were still due the printer, a large part of the edition was yet on hand, and all the best ground had been canvassed. It looked decidedly dark. Young Bigelow without hesitation released his discouraged partner from the pecuniary obligation.

Behold him now at the age of eighteen. His little educational fund has vanished, all his schemes have failed, and he is four hundred dollars in debt. His father, in the meantime, had been extending and diversifying his business. He had formed a partnership with the celebrated "John Smith," and a new mill had been erected for their operations. As the old mill now stood idle, Erastus thought that he might turn it to some account. In this project he found a person willing to join him. John Munroe was the name of his

second associate. Their business was the manufacture of twine. It was beginning to be moderately successful, when a disagreement between Smith and his partner put a stop to the operations of the younger firm.

Bigelow & Munroe then undertook to run a cotton factory in Wareham, a place in the eastern part of Massachusetts. At the end of nine months this arrangement terminated in a loss. As author and as manufacturer, he was now obligated to the extent of fourteen hundred dollars. In Massachusetts his way seemed completely hedged up. But Massachusetts is not the only place in the world. Soon after this we find our hero in the city of New-York, taking lessons in penmanship of the renowned Professor Bristow. His improvement astonishes even himself. A dozen exercises have transformed a poor writer into an accomplished penman. Then, for some time, he supported himself by teaching the art. Newark, and several other large towns in New-Jersey and on the North River, enjoyed the benefit of his instructions. He was not the person to be content with such a life. Indeed, he soon became deeply dissatisfied with that and with himself. An important period of his existence was passing away in desultory and unprofitable efforts. He was conscious of powers that needed discipline only to insure him success. His literary aspirations returned in full force. But, alas! what could he do?

In this state of mind he returned home. His parents received him kindly, but could not suppress their anxiety concerning his future. In that humble family council many plans were started and rejected. At length, with unanimous approval, the youth resolves to become a physician. After a winter passed in classical studies at Leicester Academy, he entered his name as a student in medicine. This study he prosecuted with diligence for more than a year, being much interested in the science, but constantly annoyed by a sense of his imperfect literary preparation. Even then, could he but find the means, he would go back, to start anew and aright. Again the stimulus of this early and strong desire put him on the look-out for some source of pecuniary gain. With his mind in this state, he happened, while on a visit, to sleep under a knotted or Marseilles quilt. Years before he had seen similar fabrics woven by the slow and costly process of the hand-loom. Why—he now asked himself—could not a power-loom be made to weave them? It was not until a year afterwards that he set himself in earnest to solve this problem. Having suspended, for a time, his medical studies, he matured the plan of a loom. With some pecuniary aid he was enabled to construct the machine, which worked to the satisfaction of all.

But to prosecute the enterprise, capital must be had. In quest of this he went to Boston. A sample of the fabric was shown to Messrs. Freeman, Cobb & Co., who were large importers of the article. Satisfied that it must succeed, they entered at once into an agreement, contracting to pay all expenses thus far incurred, to be at the cost of patents for this country and for England, and to erect and furnish a mill that should meet all probable demands of the market. In consideration of this contribution, the inventor was to receive, free of expense to himself, one-quarter of the profits. A brighter day had, at length dawned on the struggling youth. He had reached the position so long sought. He could now secure a thorough education. Accordingly he renewed his studies under the care of a clergyman, who was in the habit of fitting young men for college. Must we state that even this fair prospect was soon clouded? Freeman, Cobb & Co. failed in business. The period was one of commercial depression, and was, therefore, no time to raise capital for new enterprises. To increase his embarrassments,

his father had been unsuccessful in his affairs, and was now in declining health. His own position and his sense of filial duty, left him no alternative. The sternly-exacting present must be provided for. Postponing to an indefinite future his half-realized schemes and hopes, he once more relinquished his classical studies.

While, to meet the exigency, he was earnestly considering the question of "ways and means," an incident of travel recurred to his memory. In his stenographic journeying he had accidentally witnessed the process of weaving coach-lace. At the time, he had felt no interest in the matter—had taken no note of the details. He only remembered that hand-looms were employed. With this recollection, the idea of a power-loom immediately presented itself. Two days' study convinced him that the thing could be done. But another point must also be settled: would it pay? He was wholly unacquainted with the character and extent of the coach-lace business. Hiring of a neighboring farmer his work-horse and old yellow-bodied chaise, he starts, with characteristic promptness, on a tour of inquiry. The carriage makers of Worcester, Grafton, Framingham, Medway, and Dedham, were successively visited and interrogated. The result was a general reference to Messrs. Fairbanks, Loring & Co., of Boston, venders of the article, with whom these mechanics all dealt. Into Boston accordingly went the yellow chaise. Messrs. Fairbanks & Co. settled every doubt. A coach-lace power-loom, they said, would certainly do well; but the thing had been often considered by the principal lace-makers, and pronounced an impossibility. They expressed a wish to join with him in case of his succeeding—though, as they afterwards confessed, without the slightest faith in the project.

Mr. Bigelow went home, and with no other guide or help than a piece of coach-lace set himself to the accomplishment of a task, which, up to that time had been deemed impossible. Spurred on by necessity, and encouraged by a confident hope of success, his mind became intensely active. To others, indeed, he seemed to have grown suddenly stupid. When spoken to, he appeared to listen, and yet showed by his silence or inapposite reply, that he had not understood a word. One evening he was asked to show a visitor the way out. To the surprise of the latter, he took an unlighted candle, marched silently before him through a long, dark entry, and gravely bowed him from the door. During this period of mental abstraction, he took no note of time. He sat in the family circle with as little share in the conversation as if he had been deaf and dumb. All hints about bed-time were thrown away upon him, and the unmoved candle-stick, whose taper had expired in its socket, usually showed in the morning that he must have gone off to his rest, at some late hour, in the dark.

The fruits of this extraordinary application soon appeared. Within six weeks from the time of its first conception, he had a power-loom in successful operation. Let any one examine this beautiful and complicate piece of mechanism, in which iron seems to act like an intelligence, and exhibits a dexterity which human fingers scarcely surpass. Let him consider that this machine involved all the essential principles of a far more important one—the Brussels carpet loom; that the inventor was a young man not twenty-three years old, who had never even looked into a treatise on mechanics; and finally, that all this was accomplished in the brief space of forty days; and he will, at least, allow that the history of useful art exhibits few such instances of mental and executive efficiency.

Thus far we have traced, with some particularity, the ardent aspirings, the varied efforts, the successive struggles and disappointments of a poor but

persevering youth. It shows what may be accomplished by high aims, a fixed purpose, and resolute industry. It will appeal to the warm sympathies of those who love to contemplate the development of mind and character under a discipline of hardship. We have followed a rivulet from its mountain spring. Obstacle after obstacle has opposed its progress. But above, or round, or through them all, it has still forced its way. In one bright flash it has just leaped over the last wall of rock. It becomes a deep, broad river: its banks widen out and wave with fertility. But we must not be disappointed, if we miss, henceforth, the picturesqueness of its upper course.

The complete success of the coach-lace loom brought the inventor at once into notice. Fairbanks, Loring & Co., of Boston, John Wright, of Worcester, Israel Langley, of Shirley, together with the inventor and his brother Horatio, united for the purpose of building and running the looms. This association afterwards became the "Clinton Company." Mr. B. was now in a condition to carry out his early and long-cherished, though often frustrated wish in regard to education. But the time for that scheme had, he felt, gone by. He had become better acquainted with the nature and measure of his own capacities. He saw opening before him a career of activity, success, and usefulness. To this, accordingly, he resolved to devote his future life.

Soon after the Clinton Company began its operations in Lancaster, the affairs of Freeman, Cobb & Co., had become so far adjusted as to liberate from its legal embarrassment the counterpane loom. One of the firm immediately contracted with the inventor on terms highly favorable to the latter, for a number of the looms. But Mr. Bigelow happening soon after to be in New-York, saw there a new and different species of counterpane then just introduced from England. An examination of this fabric convinced him not only that it would be more marketable than the knotted counterpane, but that it could be made at less cost. With a disinterestedness hardly less rare than his ingenuity, he advised Mr. Roberts to give up the contract, and thus lay aside entirely the very curious and perfectly successful loom already made. He at the same time agreed to invent a power loom for weaving this new fabric. Within six months from that time he had such a loom in successful operation. A small mill in Lancaster was filled with the machinery, and the business, steadily prosperous, has remunerated the inventor, and enriched others.

After starting the coach-lace and counterpane establishments, Mr. Bigelow took up the question of weaving the ingrain or Kidderminster carpet by means of power-looms. It was no easy matter to produce a fabric in which the figures should match, which should have a smooth, even face and perfect selvedge, and do this with a rapidity so much beyond that of the hand-loom as to make it an object. The hand-loom weaver can, to some extent, meet these conditions by the exercise of his judgment. If the shuttle has not fully done its work, he can give the weft-thread a pull with his fingers. If, on measuring, he finds that the figure is getting to be too long, or too short, he remedies the fault by putting either more or less force to the lathe, as he beats up. If he perceives that the surface of the cloth is becoming rough, he regulates the tension of the warps. By the exercise of constant vigilance, skill, and judgment, he can *approximate* to the production of a complete and regular fabric. But how shall these properties be imparted to inert matter? How shall iron be taught to observe, to judge, and to vary its action with such modifications as the case may require?

To the achievement of this seeming impracticability our inventor now addressed his extraordinary powers of analysis and concentration. A short study assured him that the idea was feasible. On the strength of this conviction—before he had made a model or even complete drawings of the machine—he entered into a written contract with a company in Lowell, to furnish them with power-looms for making ingrain carpets. His first loom for two-ply carpets was set up within a year. In the matching of its figures, in evenness of surface, and in the regularity of its selvedges, its product far surpassed that of any hand-loom. Its average daily work was from ten to twelve yards; that of the hand-loom is about eight yards.

He *must*, he *could*, do better than that. A second loom, with various modifications and improvements was ere long produced. By this the daily product was raised to eighteen yards. Still he was not satisfied. A third machine, with essential variations, at length appeared. This loom made, with perfect ease, from twenty-five to twenty-seven yards a day. The others, of course, like his first counterpane loom, were thrown aside. This loom was started in the summer of 1841. In the autumn he went to England. During this short visit the manufactures of that country naturally drew his special regard. He at once saw that, in some important particulars, the English manufactures were in advance of ours. His opinion to this effect, frankly expressed on his return to Lowell, was received at first with murmurs of surprise and incredulity. It was not long, however, before the practical adoption of his suggestions showed that they had taken full effect. In 1842 the several manufacturing corporations of Lowell paid a deserved tribute to Mr. Bigelow's knowledge and skill, by creating a new office, with a liberal salary, and appointing him to fill it. His duties were to make improvements and suggestions, and, generally, to advise and consult with the agents of the respective companies. In this capacity he brought forward some important improvements, which were adopted by all the cotton mills of Lowell. Finding his new office too general in its character and duties to give results satisfactory to himself, he resigned at the end of eighteen months, and with his retirement the office itself expired. During this period he built, for the Lowell Company, a mill to receive his power-looms; and thus started the first successful power-loom carpet factory recorded in the annals of manufacture.

Before quitting his post at Lowell, Mr. Bigelow had projected a new manufacturing establishment at Lancaster for the weaving of ginghams. A company was formed; the required capital was promptly subscribed, and the projector was charged with the execution of the design. At the same time the Lowell Company resolved to build a large mill for the reception of their carpet power-looms, and Mr. Bigelow was commissioned to design and erect it. Both of these mills are of vast size, and in character perfectly unique. The one last named, with its two hundred iron looms, is, in fact, a grand carpet machine—the mill and its furniture being so combined, adjusted, and adapted, as to produce the most harmonious action and the highest results. The Lancaster mill is even more remarkable. Its connected structures, covering more than four acres of ground, are filled with machinery and apparatus of the most perfect character, much of which was invented or adapted, and all of which was arranged and adjusted by Mr. Bigelow. Of this mill, the editor of the *Merchants' Magazine* says: "It is deservedly rated as the most perfect establishment in the United States." Of the dye-house connected with it, he speaks as "probably the most perfect in the world;" adding, "that the entire arrangement is of the most perfect description, and in its

vast completeness stands a splendid monument to the genius and masterly power of the mind of its projector." These immense structures, with their numerous and various and complicated machines, many of which were new, and nearly all of which were newly modified or adjusted, were carried on simultaneously—the working plans for the buildings and the machinery being furnished as fast as the work advanced. These plans, once matured and put into the hands of the workmen, were scarcely in a single instance changed; and the loss in this way was exceedingly small—a striking proof of Mr. Bigelow's business talent, his constructive abilities, and far-reaching mental vision. Contemporaneously with these labors, he superintended important enlargements of the Counterpane Works, and of those belonging to the Coach-lace Company. Nor was this all. During the three years thus occupied, he made nine distinct, important, and patented inventions. It would have been strange if, under a mental pressure so constant and intense, his health had not given way. Justly alarmed, at length, he fled from the toil and care which would soon have ended all. A voyage to Europe, with his family, and a continental journey, completely restored him.

On his return in 1848, he proceeded to develop and complete the Brussels Carpet Loom. The basis of this machine was indeed contained in the loom for coach-lace. But farther invention was needed to adapt it to the weaving of wider fabrics, to the making of figures that match, and to the formation of velvet-pile. This was fully accomplished. His power-looms weave rapidly and perfectly the Brussels and the Wilton, the tapestry and velvet tapestry carpets. They are competent, in fact, to every kind of looped and velvet-pile fabric known in the market.

In September, 1851, Mr. Bigelow took with him to England specimens of his Brussels carpet. Their appearance at the Exhibition, though late, drew much attention, and largely increased the favor with which the British public had already begun to look on the so long despised American Department. The juries having then closed their labors, no prize could be awarded to these fabrics. But in a supplement to the Report on Class XIX, we find the following:

"The specimens of Brussels carpeting exhibited by Mr. Bigelow are woven by a power-loom, invented and patented by him, and are better and more perfectly woven than any hand-loom goods that have come under the notice of the jury. This, however, is a very small part of their merit, or rather of that of Mr. Bigelow, who has completely triumphed over the numerous obstacles that presented themselves, and succeeded in substituting steam-power for manual labor in the manufacture of five-frame Brussels carpets. Several patents have been taken out by different inventors in this country for effecting the same object; but as yet none of them has been brought into successful or extensive operation, and the honor of this achievement—one of great practical difficulty, as well as of great commercial value, must be awarded to a native of the United States."

The shrewd and practical manufacturers of England were quick to see and prompt to acknowledge the value of the new machinery. An arrangement was immediately made with Messrs. Crossly & Sons, for placing the looms in their immense carpet manufactory at Halifax. Subsequently these gentlemen purchased, and now hold, the patent-right for the United Kingdom.

Previously to the introduction of Mr. Bigelow's inventions, power-looms had scarcely been used for any but the plainest and simplest fabrics. These improvements cover the whole higher range of textile art. If we except such regal luxuries as the pictured tapestries of the Gobelins, there is no

complex, or useful, or beautiful texture produced by skill and patience in the hand-loom, to which his machinery has not been, or may not be, adapted. As compared with the plainer and more prosaic processes, this almost magical mechanism, and its results of endless and beautiful variety, may be called, not unaptly, the poetry of the loom. With such means at their command, and aided by the untiring arm of falling or of expanding water, our modern Penelopes are producing webs that rival the fabled labors of Arachne, with a rapidity which Pallas might have envied.

To appreciate the difficulties of this achievement, and the greatness of the success, one must keep in view the nature and demands of the weaving art. Each different fibre which it uses has its own peculiar properties, and whether it be cotton, or wool, or flax, or silk, the machinery must be adapted to those peculiarities. The number of fabrics which differ essentially in their texture is almost countless. To these considerations must be added the constantly recurring changes in figure and in color required to meet a fickle taste and ever-varying demand. *He* must be a good arithmetician who can calculate the combinations required to produce by automatic machinery the numerous dissimilar fabrics which fill up the long interval between plain cloth and a Wilton carpet. More than all, perhaps, it deserves to be considered, that a power-loom for weaving tissues of the higher class, must have not only many and complex mechanical movements, but, to a certain extent, also the capacity of self-adaptation—an ability, in fact, to meet exigencies as they arise.

The extent of Mr. Bigelow's contributions to inventive art has often been misapprehended. Many think of him as the inventor of a single machine—the carpet power-loom—and suppose this to be all. It is a great mistake. The numerous and complex requirements of the textile art were not to be met by a single invention. Accordingly, Mr. Bigelow has, in this connection, twenty-two United States patents. Each of these is a distinct but necessary part in a closely-connected series of improvements, by means of which, under appropriate modifications, every variety of fabric may be wrought by power-looms.

It is difficult, by mere description, to impart a clear idea of mechanical movements. All that we shall here attempt will, we trust, be intelligible to any one who has ever seen a loom in action. The figure on coach lace is formed by raising on the surface of the ground-cloth, a pile similar to that of the Brussels carpet. It is made by looping the warps over fine wires, which are inserted under such of them as have been selected by the Jacquard to form the figure. These warps are then woven into the body of the cloth. The wires are now withdrawn, to be reinserted. In the Bigelow loom this finger-work is executed by automatic pincers. There is something wonderfully cunning in the movement of these nippers. Seizing the end of the wire, they draw it out from the loops, carry it back towards the lathe, thrust it into what is called the open shed, and there drop it. The warp-threads, which had been drawn apart, are now closed, and immediately reopened for the passage of the shuttle, which carries the woof to tie and bind the loops. The pincers having dropped their wire, return to take another. As it is necessary to have a number of these wires, and as they lie close together, a difficulty arose. It was clearly impossible to make the pincers so narrow, and so exact in their discrimination, as to seize the proper wire, and not molest its neighbors. This was avoided by a mechanical contrivance on the other side of the loom, which, just at the right moment, gives a little push to just the right wire, and thus puts it in just the right place for the waiting

pincers. The curious mechanism by which these little rods are withdrawn and replaced, must work, it is evident, in perfect harmony with that which forms the figure.

The loom for Brussels and tapestry carpeting is the coach-lace loom full grown. Nothing short of actual inspection can give any just idea of its wonderful capacities and life-like action. Wires three feet or more in length are here inserted and withdrawn with a precision and quickness which no manual dexterity ever attained. Let us watch the operation. First, mark that intruding knife or wedge, which, as it rises, separates from its companion the wire next to be taken, and guides the pusher, which shoves it along towards the pincers. The pincers now walk up, grasp the wire, and draw it entirely out. While this is doing, another set of nippers, hanging down like two human hands, come forward, descend, and catch the wire at the moment when the drawing pincers drop their prey. No sooner have they seized the wire than they retreat to their original position, beneath which a small, angular trough has just arrived. The fingers relax, and the wire drops into the trough, which immediately returns. Last of all, a triangular pusher rushing through the trough sends the rod into the open shed. Note, also, the double action of the withdrawing pincers, which, while they attend to their own special mission, perform, also, sergeant's duty, by constantly bringing into line the straggling wires. Those bird-like, three-fingered claws, which dart back and forth with such rapidity, are busy in plaiting the selvedge, and their work is perfect. These, too, are "contrived a double debt to pay," for, whenever their thread breaks, they instantly stop the loom. In this loom, and that for coach-lace, the mechanical contrivance for weighting the warp-threads is the same, being one of the most ingenious, as well as most important, of Mr. Bigelow's improvements.

What is this remarkable process which we call *invention?* How does the brain act while devising its wonders of mechanic skill? These are questions of interest to inquiring minds, and may well puzzle those to whom even the witnessed action of complicate mechanism is a mystery impenetrable. By some it is supposed to be a sort of hybrid process—a result in which chance and calculation are about equally concerned. Accident has, doubtless, at times, had something to do with it. The slightest incident may start the train of thought which shall lead to some great discovery or invention. But in that train of thought there is nothing random or accidental. The mathematical element must, of necessity, figure largely. Yet in the mental series it is not first in order, nor is it, in fact, more essential than another faculty seldom associated with our ideas of machinery. The great mechanical inventor is, perhaps, the only person who compels the Mathematics to wait upon the Imagination. This power, and this alone, can supply him with the *means* of accomplishing his purposes. For the effectual use of these means he depends on the science of number and quantity. That this substantially was the process in those inventions to which our attention has now been turned, appears from the following answer of Mr. Bigelow to an inquiry on that point:

"I am not sure that I can convey to your mind a satisfactory idea of the inventive process in my own case. One thing is certain, it is not chance. Neither does it depend, to any great extent, on suggestive circumstances. These may present the objects, but they are no guide to the invention itself. The falling apple only suggested to Newton a subject of inquiry. All that we know of the law of gravitation had to be reasoned out afterward.

My first step toward an invention has always been to get a clear idea of

the object aimed at. I learn its requirements as a whole, and also as composed of separate parts. If, for example, that object be the weaving of coach-lace, I ascertain the character of the several motions required, and the relations which these must sustain to each other in order to effect a combined result. Secondly, I devise means to produce these motions; and, thirdly, I combine these means, and reduce them to a state of harmonious co-operation.

To carry an invention through its first and second stages is comparatively easy. The first is simply an investigation of facts; the second, as far as I can trace the operations of my own mind, comes through the exercise of the imagination. I am never at a loss for means, in the sense above explained. On the contrary, my chief difficulty is to select from the variety always at command those which are most appropriate. To make this choice of the elementary means, and to combine them in unity and harmony—to conduct, that is, an invention though its last or practical stage, constitutes the chief labor.

In making this choice of the elementary parts, one must reason from what is known to what is not so—keeping in mind, at the same time, the necessary combinations, examining each element, not only in reference to its peculiar function, but to its fitness, also, for becoming a part of the whole. Each portion must be thus examined and re-examined, modified and re-modified, until harmony and unity are fully established. From the severity of this labor many inventors shrink, and this is the main reason why some very ingenious men fail to obtain satisfactory results. In my own case, the labor has not ended with the perfection of my looms; other machines, preparatory and auxiliar, were necessary to give full effect to the inventions.

It is a well-known fact, complex inventions have not, as a general thing, come at once into use. In many cases this has been because they were not immediately brought into harmony with other things. In a state of natural progress, things move on together, and become mutually adjusted. An important invention often disturbs these adjustments, and cannot be made to work efficiently until other inventions and new arrangements have brought all the related processes in accordance with it. This arduous duty I have endeavored to perform for all my looms. Lee's hand stocking-loom was invented several years before it was reduced to practice, and even this was not effected by the inventor. The comparatively simple power-loom for weaving plain cloth was of very slow growth. A long time elapsed before its organization was so far harmonized as to work at all, and, for several years afterward, successive improvements only gave to it a moderate speed. Its capacity, in this respect, has actually been doubled within the last fifteen years. If my own more complex machines, for the production of figured fabrics, have attained at once to a high state of perfection, I attribute it, in part, to the fact that my attention has also been given to those processes which are subordinate, preparatory, and collateral, and that these have been made to accord with the main invention. That this claim of success is not extravagant will appear, I think, when it is considered that the cost of weaving coach-lace was, at one stride, reduced from twenty-two cents to three cents a yard, and that of Brussels carpet from thirty cents to four cents. Of the fabric last named, my power-loom, under the easy tending of a single girl, produces from twenty to twenty-five yards daily, and this of the best quality. That mechanical possibilities do not reach much farther in this direction, will be conceded, probably, by all who are acquainted with the peculiar character of the process.

I find no difficulty in effecting that concentration of thought which is so necessary in pursuits like mine. Indeed, it is not easy for me to withdraw my mind from any subject in which it has once become interested, until its general bearings at least are fully ascertained. I always mature in my mind the general plan of an invention before attempting to execute it, resorting occasionally to sketches on paper for the more intricate parts. A draughtsman prepares the working drawings from sketches furnished by me, which indicate in figures the proportion of the parts. I never make anything with my own hands. I do not like even drawing to a scale."

It has become almost a proverbial remark that great inventors seldom reap the fruit of their ingenious toil. This has happened, not merely from the fact referred to above, that they had failed to perfect their inventions by meeting, as they ought, the new demands which their own improvements had created, but, also, because they have too frequently been inventors *only*. Absorbed in their own pleasing projects, neglecting to avail themselves of what they have actually accomplished, in their ardent zeal to achieve something greater, they leave their rights unsecured, or suffer them to slip out of their hands. They labor, and other men—far inferior men—enter into their labors. To this rule, if it be one, Mr. Bigelow is a striking exception. He is no dreaming genius, who needs a guardian to protect his rights and manage his affairs. He is as much at home in matters of business as among the wheels and levers of his looms. Several of his most important contracts, drawn wholly by himself, have commanded the admiration of acute lawyers. More than once his patents have been invaded; but, in every case, the offenders have yielded, either to his prudent firmness, or to the strong arm of law. In a single instance—and then through the negligence of a legal agent—he failed to obtain protection, in the English patent office, for some important principles. It was a serious injury.

In the ingrain-carpet power-looms of the great mills at Lowell, about thirteen hundred thousand yards are made annually. The same fabric is woven in large quantities by companies at Tariffville and Thompsonville, Ct., whose power-looms are worked under license from the Lowell Company. Messrs. Higgins & Co. are using the Bigelow looms for tapestry and velvet-tapestry carpets, in their establishment in New-York. Another Company, in Troy, N. Y., is weaving the same article under license from Mr. Bigelow. At Humphreysville, Ct., several looms are now employed in the manufacture of silk brocatelle. Mr. B. adapted and constructed the machinery for this beautiful fabric in 1851. Goods for which the hand-loom artisans of Lyons get three francs a yard, are made here at a cost for labor of fifteen cents a yard. The agent, Mr. Humaston, is entitled to much praise for the skill and perseverance with which he has brought these works into successful operation.

In 1849, Clinton was made a township by legislative act. In 1837, when the brothers Bigelow went to this spot, that they might use one of its brooks in operating the coach-lace loom, it was the least cultivated and least valued part of the old and beautiful town of Lancaster. At that time it contained some two hundred inhabitants; it has now about four thousand. There may be seen the great gingham mill, already named, producing annually nearly five millions of yards; the counterpane mill, which turns out yearly one hundred and fifty thousand dollars' worth of goods; the establishment of the Clinton Company, where two million yards of coach-lace, tweeds, &c., are woven; and that of the Bigelow Carpet Company, belonging to the two Bigelows, and to H. P. Fairbanks, of Boston, the daily results of which are

a thousand yards of Brussels and Wilton carpeting. The amount made by this single establishment, now only three years old, is equal to the entire importation of Brussels carpet from England, at the time when the works were started. Though these looms run night and day, they are inadequate to the constant demand.

We have seen, with admiration, on both sides of the ocean, many a village and city which owed their prosperity, if not their existence, to the genius of modern manufacture. But, to us, there is a charm in Clinton, which belongs to no other place of the kind. As, from those gentle, woody heights, we have surveyed its monuments of ingenuity, wealth, and enterprise—its numerous evidences of industry and thrift—its pleasant homes of competence and content—its institutions for learning and social improvement, and its neat temples reared for God—all of it the magical creation of a few short years—the spectacle certainly lost none of its interest, because we could trace it directly to the efforts of a single mind. Clinton, with all its actual and its prospective importance, was assuredly predestinated in that abode of honorable poverty, those hours of toil and vigil, and that filial love, which gave birth to the coach-lace loom. Happy he who may thus behold around him the good which he has done! While scattering "plenty o'er a smiling land," he plants, also, in good ground, the blessed seeds of individual and domestic happiness, of social progress, of education, and morals, and religion.

It would be a great injustice to omit in this reference to Clinton, one, who deserves to be called its twin founder—Horatio N. Bigelow. At the very outset, while success was yet uncertain, when he was himself poor and struggling, he gave pecuniary aid to his brother in the patenting and building of his inventions. All the mills in Clinton were started by him, and two of them are still under his management. To his skill, industry, and business talent, much of their success is undoubtedly due. It is not easy to estimate the advantage derived by the inventor from so able and so faithful an execution of his plans.

Mr. Bigelow's father, for whose sustenance and comfort he gave up his own cherished schemes, and devoted himself to invention, after aiding his son in building the coach-lace loom, died, much to the son's regret, just before its success was made certain. His mother, not yet very far advanced, lives to share the prosperity and affection of her sons.* He has been twice married. His first wife died early, leaving an infant child. This boy, of much promise, survived his mother hardly seven years. His present wife is a daughter of the late Col. David Means, of Amherst, N. H. They have one child—a daughter.

Mr. B. is a man of middling stature, and slightly inclined to roundness. The lineaments of his face and head are such as one might look for after hearing his story.

The individual, whose well-directed labors have not only gained for himself reputation and fortune, but furnish employment and support to many thousand persons, while they save annually for his native land millions of dollars, is still under forty years of age. With such power of intellectual analysis and combination, such energy and persistency of purpose, he cannot yet have discharged the debt which he owes to his country and to mankind. That he still intends to devote himself to the advancement of industrial art, in all its interests, moral and material, we have the best reason to believe.

* This estimable lady died a few weeks since, at the house of her son, in Boston.

WELCH ANHYDROUS COMPOSITION FOR ROOFS, FLAGGINGS, FRONTS, &c.

WHATEVER may be the firmness of the foundation, the massiveness or symmetry of the walls, and the elegance and tastefulness of external or internal finish, a building without a permanent water-proof and fire-proof roof, is an imperfect and defective structure. It is destitute of one of the most essential qualities of a comfortable, safe, or durable edifice. Hence, a good roofing material has long been regarded as a very important and valuable matter. Ingenuity has been taxed to invent some substantial, reliable, and economical means of protecting persons and property from the annoyance, injury, and perils, which are every where experienced from imperfect roofs.

In Europe, tiles are used; but they are expensive and unreliable. In our own country, shingles, slate, tin, zinc, copper, lead, brass, iron, and paper covered with tar and gravel, all have their advocates, and yet none of them exactly meet the exigencies of the case for which they are demanded. Shingles are unsafe, and too often insecure. Slate is expensive, and inaccessible to the great mass of our people. Tin requires great expense of painting, and is constantly exposed to corrosion, and, besides this, it is difficult to repair, and often, being too long neglected, till the roof leaks like a sieve, is beyond the cure of solder and patching, and is, therefore, useless.

This article is rarely used for roofs in Great Britain, or on the continent of Europe. Tarred and gravelled paper, which have been so extensively used in various parts of the country, after a thorough experiment, have gone into almost universal disrepute. All these adaptations for roofs have objections more or less serious, either on account of the cost, security, combustibility, perishableness, or failure in other respects, to answer their intended design.

The Anhydrous Composition, at the head of this article, seems to meet all the exigencies of the case so much better than any other material, that if half that is claimed for it is proved, it must eventually supersede all other materials now employed for such purposes. Those who are conversant with this composition claim for it as an effective and invaluable resistant of water; and, hence, a roof made of it can never leak. Being incombustible, it can not take fire. Such is its nature, that it can never wear out or decay. It is a non-conductor of heat and cold, and, hence, tends to secure a cool temperature to upper rooms in the heat of summer, and a moderate temperature in winter. As the materials that compose it are found in great abundance in every state of the Union, it is universally accessible. It is cheaper than any other permanent roof. It may be put on at all seasons of the year, and is equally adapted to all climates, and to every temperature, both of cold and hot; both wet and dry. It may be manufactured by fixtures of very trifling expense, in every city and principal district of the land. These excellent qualities of this article may be regarded as facts established both by experiment and the ordeal of scientific analysis. If broken by violence, or other cause, it is easily repaired. On all other points, this composition solicits the careful and thorough scrutiny of the public.

It may be applied to roofs perfectly flat, or in situations where the water may remain on them for any length of time, as the water will never penetrate the composition. Sods of grass may be placed on it, and seeds planted and cultivated in the soil, and yet the dampness will not penetrate the roof. It is readily applied, also, to leaky roofs in any situation, whether covered with tin, shingles, sand, or other materials, without removing the old material;

nor do roofs thus treated require any outlay for paint, or other substances, with which to keep it in good order. Gutters as well as roofs are treated with this composition. It is also useful for damp walls, to secure dryness, and in the construction of vaults under sidewalks, in cemeteries and cellars, and to repair them when injured by the dripping of water. If used under sidewalks, and in other similar conditions, it prevents the percolation of water and its pernicious consequences.

It is also well fitted for *deafening* floors, and thus preventing injury to plastering by leakage of water through them.

This Anhydrous Composition, with a little variation of material, and different preparation, may be made into a plaster, and applied to the outside of the walls of brick and wooden buildings, in imitation of granite, brown stone, or any description of marble, white or clouded.

This is claiming a great deal for any material, applied for such purposes, and it may, hereafter, be found that we are in error in respect to it. But we present the claims of those interested in it, (*with some abatement,*) and so far as evidence is furnished to us personally, that these claims are well founded from the evidence furnished us. From the evidence furnished us, we are induced to regard this a very valuable material. We ought, also, to add that it is not costly, but is comparatively cheap, so far as first cost is concerned.

THE WATER-POWER ON THE POTOMAC.

We have recently received a pamphlet containing a minute description of the Water-Power of "The Great Falls Manufacturing Company" on the Potomac, opposite Washington and Georgetown. The legislature of Virginia has incorporated the town of Potomac, at the Great Falls. The surface of the territory thus incorporated is undulating, and abounds with springs of the purest water, and the adjacent country is very beautiful. This town of Potomac is, from Georgetown, fourteen miles; from Washington City, fifteen, and from Alexandria about twenty miles. It includes quarries of building stones, clay for bricks, and an abundance of timbers. Lime and cement are easily procured.

The Water-Power is immense; the fall being nearly eighty feet. A wing dam is also contemplated, raising it five feet more. The Manufacturing Company was incorporated in May, 1852, for a period of thirty years, and with a capital of one million of dollars. The privileges granted them, besides those named, are of very great value. Among these is a charter from the state of Maryland, authorizing a toll bridge across the Potomac, uniting the town with the Ohio and Chesapeake Canal, and from Virginia, for a railroad to intersect with the Orange and Alexandria railroad.

The area of the water way, at Little Falls, is 2,040 square feet; the superficial velocity, 68 feet per minute; the true mean velocity is 56 feet; and, hence, the quantity running is 114,240 cubic feet per minute. The property has been surveyed; the head-gates, guard-walls and dam, have been located by skillful engineers, John and Stewart Chase, of Mass., and Asa Jackson, of Leesburg, Va. Extensive maps are attached to the description, and the whole is ready for any enterprising manufacturers, or capitalists, who will unite in the improvement of this tremendous water-power. Mr. Hall Neilson, of Washington, D. C., is President of the Company.

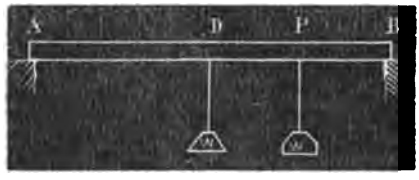
THE STRENGTH OF BEAMS.

In the paper under this heading, in the January number of this Journal, it was found that the formula for the strength of beams was

$$W = \frac{b\,d^2}{l}\,C$$

in which W = the breaking weight of the beam; — b = its breadth; d = its depth; l = its length, and C = a constant quantity deduced from experiment. This formula is applicable when the load is placed in the middle of the beam. If the strength of the beam is just sufficient to sustain it when in the middle, it will be more than enough when at any other point. For if W (Fig. 4) be the greatest weight that a beam of uniform section will support in the middle, D, then the greatest W′, which it will support at any other point, P, will be found by the proportion.

Fig. 4.



$$A\,P \times P\,B : A\,D \times D\,B :: W : W'$$

$$W' = W\,\frac{(A\,D \times D\,B)}{(A\,P \times P\,B)}$$

Therefore, a beam of uniform section throughout, to be used for sustaining a movable weight, as a bridge does a carriage, is unnecessarily strong at all other points, when it is of just sufficient strength at the centre. Indeed, this is evident at first sight; for it is obvious that the leverage exerted by the weight, W, acting at the distances D A and D B from the abutments, is greater than that exerted by the same weight acting at the distances A P and P B.

Theoretically, then, the area of the section of the beam should continually diminish from the centre toward each end, in the ratio of the rectangles of the segments; that is, the section at the point P should be less than the section at the point D, in the proportion that A P × P B is less than A D × D B; so that at the abutments the beam would have tapered to a point.

But here we come to the broad distinction existing between the *strain* and the simple *weight* of the load, between the tendency toward the fracture of the beam and the pressure upon the abutments. The load has a two-fold effect, the former of which alone we have been considering. The one is the simple action of the weight itself, while the other is the action of the weight in conjunction with the leverage. Thus, suppose 50 lbs. to be suspended from the end of a beam 10 feet long, the *strain* exerted will be 50 × 10 = 500 lbs., while the *weight* which the abutment is called upon to sustain is only 50 lbs. The *strain*, from a constant load, varies, of course, as its distance from the abutment, while the *weight* remains constant for any distance. And the cross section of the beam must be of sufficient area to support this weight; therefore, it cannot taper to a point, as the equation would seem to indicate. However, as the weight is generally so small in proportion to the strain, it is scientifically proper that a beam, intended for the support of

movable loads, should be smaller at the end than in the middle; and this is generally or often the case with bridge chords, &c.

We have hitherto supposed that the weight of the beam itself was nothing; but, practically, we will hardly find this supposition a correct one. The weight of the beam is to be taken into consideration, and many times is a most important element in the calculation. Thus, the greatest load that can ever in practice be placed upon the Britannia Tubular Bridge, over Menai straits, would be a train of locomotive engines, extending from end to end, and would weigh about 1,500 tons. But the weight of the bridge itself is nearly 11,000 tons.

The effect of this weight is, of course, similar to that of a load equally distributed throughout the entire length of the beam, and is to be estimated as such. The weight of each half of the beam may be supposed to be collected at its centre of gravity, *i. e.*, half way between the abutment and the centre of the beam, or at a distance of $\frac{1}{4}\ l$ from the abutment. Designating the weight of the half beam by w, the expression for the strain will be $w \times \frac{1}{4}\ l = \frac{l\ w}{4}$. That is, the strain resulting from the weight of the half beam is equal to one-fourth the product of the length of the beam into its weight.

Suppose the weight, w, to be accumulated at the middle of the beam. It would then act with the leverage, $\frac{1}{2}\ l$, instead of $\frac{1}{4}l$, as before, and the expression for the strain will become $\frac{l\ w}{2}$. Therefore, a beam will sustain a twice heavier load when equally distributed than when accumulated at the centre.

This may be illustrated somewhat more practically by means of a diagram, and as it shows the prime importance of taking the leverage into account in questions of this kind, it may be well so to explain it.

Fig. 5.

Let A B (Fig. 5) be a beam, resting upon the supports, A and B, at the ends. Let D C and C E be weights, resting upon chocks at D, C, and E. It is evident that the effect is the same as though they were equally distributed over the whole length of the beam. One-half of the weight D C, is sustained at D, and the other half at C, and the like is true of the weight C E. But the parts sustained at D and E, immediately over the abutments, act without leverage, and consequently exert no fracturing strain. The parts sustained at C act with a leverage, A C, or its equal, C B, and, therefore, they alone tend toward fracture. But the weight sustained at C is only half the entire weight. The other half rests upon D and E; therefore the beam will support a weight, if equally distributed, equal to twice that which it can sustain if accumulated at the middle.

The weight of a single beam, as compared with the load which, in structures of various kinds, it is called on to sustain, is generally of trivial moment, and may, in many instances, be safely omitted in the calculation. But in large "built beams," such as bridges and trusses of any description, it is of great importance, and must be carefully prepared for. In cases like this, an estimate must first be made of the dimensions of the frame necessary for the

support of its own weight, and then afterward those dimensions must be modified, so as to sustain, in addition, the load about to be imposed.

To illustrate the mode of doing this, let us take one or two examples.

An example given in the previous article was—What is the breaking weight of a beam of oak, 10 inches broad, 12 inches deep, and 14 feet long? The answer was found to be 14,331 lbs. This, of course, includes the weight of the beam itself. We wish to find how much weight can be placed upon the beam in addition to its own weight. Oak weighs about 36 lbs. per cubic foot. The weight of the beam then will be about 420 lbs. This weight being equally distributed, is equivalent to 210 lbs. placed at the centre. The breaking weight proper then, that is, the weight of the imposed load, will be 14,331 — 210 = 14,121 lbs., or 28,242 lbs. equally distributed.

Take another example.

Seasoned pitch-pine weighs about 30 lbs. per cubic foot. What must be the length of a stick of this material, 12 inches square, that the breaking-weight, suspended from the middle, exclusive of its own weight, may be 10,000 lbs? In the equation, $W = \frac{b\,d^2}{l}\,C$ as applied to this case, all the quantities are known, except W and l; the first of which is the entire weight, and the other, the length of the stick in feet. Since the sectional area of the beam is a square foot, there will be as many cubic feet in its bulk as there are linear feet in its length; and each one of these weighing 30 lbs., the weight of the beam will be represented by $30\,l$. But this weight, $30\,l$, is equally distributed; its effect is therefore equivalent to $15\,l$, suspended from the middle. The entire breaking-weight of the beam, therefore, will be $10{,}000 + 15\,l$. By the table given in the previous number, we find C = 1,632. And substituting these values in the equation $W = \frac{b\,d^2}{l}\,C$, we have

$$10{,}000 + 15\,l = \frac{12 \times 144}{12\,l}\,1632 = \frac{1728 \times 1632}{12\,l}$$

$$= \frac{235008}{l}$$

$$15\,l^2 + 10{,}000\,l = 235008.$$

$$l^2 \times 666{,}66\,l = 15667.2$$ a quadratic equation, which, being solved, gives

$$l = 22.7 \text{ ft.}$$

In like manner, the equation may be solved for any other of the dimensions; as for instance, to find W, we have

$$W + 15 \times 22.7 = \frac{235008}{22.7} = 10352.8$$

$W = 10352.8 - 15 \times 22.7 = 10{,}012.3$ lbs., which is within a fraction of the value of W, as first given.

For trussed bridges, trussed frames, and such built beams, a shorter way may be adopted.

Suppose a truss supported at each end, and loaded in the middle; or what is the same thing, for our purpose, supported at one end, and loaded at the other. Let the imposed weight be represented by W, and the weight of the truss itself by w. Let h be the height of the truss, and l its length. It is required to find the ultimate strength of each of the two chords, upper and lower = S.

The effect of the load, W, acting at the distance, l, is represented by $W\,l$. The effect of the weight, w, acting at the distance, $\frac{1}{2}\,l$, (its centre of gravity) is represented by $\frac{w\,l}{2}$. The sum of the two is $W\,l + \frac{w\,l}{2}$.

The effect of the strength or resistance, S, of the upper chord, acting at the distance, $\frac{1}{2}\,h$, from the neutral axis, is represented by $S \times \frac{1}{2}h$; and that of the lower chord is the same. The sum of the two $(S \times \frac{1}{2}\,h) + (S \times \frac{1}{2}\,h) = S\,h$, which will be equivalent to the straining force of the entire load—that is,

$$S\,h = W\,l + \frac{w\,l}{2} : \text{ whence}$$

$$S = l\,\frac{(2\,W + w)}{(2\,h)} = \text{Strength of chord.}$$

It should be remarked that l, as here employed, represents the length of the truss supported at one end and loaded at the other. If the equation be used with reference to a truss supported at both ends and loaded in the middle, l must be halved, and the equation will become

$$S = l\,\frac{(2\,W + w)}{(4\,h)}$$

To apply this equation, suppose we wish to ascertain the strength and size of chord necessary for a truss bridge of 180 feet span, and weighing 240,000 lbs., and to bear an imposed load of 4,000 lbs. per lineal foot, (which is more than twice as much as any ordinary bridge is ever required to sustain.) The whole imposed load on the bridge will be 720,000 lbs., of which each truss will support one half, or 360,000 lbs., and each half truss 180,000 lbs. (By each half truss, is meant that part between one of the abutments and the middle of the truss.) In this case, then, $W = 180{,}000$ and $w = 240{,}000$. Let $h = 18$ ft. while $l = 180$ ft. Substituting these quantities in the equation above, we have

$$S = 180\,\frac{(360{,}000 + 240{,}000)}{(72)} = 180 \times 8333\tfrac{1}{3}$$

$$S = 1{,}499{,}999 \text{ lbs.—say } 1{,}500{,}000 \text{ lbs.}$$

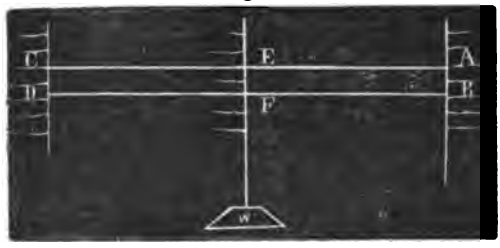
Assuming 8,000 lbs. per square inch of sectional area as the breaking weight of the chords, we have 187.5 square inches as the necessary area of section of each chord at the middle.

The same equation can be solved for any one of the quantities contained in it, when the rest are known.

The legitimate strain created by a movable load, such as a train of cars passing over a bridge, is to be estimated like all other similar strains. It is greatest when the load is at the middle, and diminishes as it approaches either end, in the proportion above stated. The effect of the load at each point in its progress can be easily found from the formulae before given. The *vibration* necessarily attending the passage of such a burden as a heavy train of cars, is to be estimated on other principles, that do not come within the scope of the present purpose. Provision is generally made against such vibration by a system of stiffening and bracing. Therefore, the truss for a bridge is necessarily somewhat more complicated than that for the support of a roof, or any similar stationary permanent load.

Let us find, from the dimensions of the beam, and the breaking weight as data, some formula which may serve as an expression for the strain per square inch of sectional area.

Fig. 6.



If W (Fig. 6) be the breaking weight at the centre, then the load supported by the half beam, B E, will be $\frac{1}{2}$ W. The length of the whole beam, D B, is l, and that of the half beam, B E, is $\frac{1}{2}l$. The leverage is equal to this length, divided by the depth, A B $= d$ of the beam, and will be, therefore, $\frac{\frac{1}{2}l}{d}$, which is equivalent to $\frac{l}{2d}$. The product of this leverage into the weight, $\frac{1}{2}$ W, will represent the entire strain on the cross section, $\frac{l}{2d} \times \frac{1}{2}W = \frac{Wl}{4d}$, which, divided by $b\,d$, the expression for the sectional area, will be the strain per square inch; and the formula will be

$$H = \frac{Wl}{4\,b\,d^2}, \text{ — that is}$$

the strain, per square inch, equals the product of the length of the beam into the entire weight required to break it at the centre, divided by four times the product of the sectional area and depth—all the dimensions being of the same denomination, *i. e.*, all in inches, or all in feet.

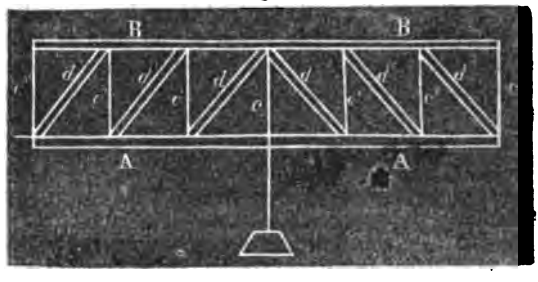
Take the example first given. A beam of oak, 14 feet long, 10 inches thick, and 12 inches deep, just breaks under a weight at the centre—including its own—of 14,331 lbs. What is the strain per square inch of section?

$$H = \frac{14{,}331 \times (14 \times 12)}{4 \times 10 \times 12^2} = \frac{2407608}{5760} = 418 \text{ — which is}$$

one-fourth of the number given as the value of the constant C for this material. Indeed, we might have reached the same result from the equation itself. For, substituting for W its valuë, as given in the formula $W = \frac{b\,d^2}{l}$ C, and, reducing, we find $H = \frac{1}{4}$ C.

This is applicable for single, unassisted beams. But it is evident that a disposition of several beams may be made, such that one may assist and support the other. Such is the case in an ordinary truss. It may, perhaps, be well to explain the principles on which the simple but effectual frame is constructed:

Fig. 7.



A A (Fig. 7) and B B are the chords. *c c c*″ &c., are the ties, and *d d*′ and *d*″ are the braces. Suppose a load to be suspended from the lower chord, A A. It is communicated by the tie, *c*, to the upper chord, B B, where it is divided and transferred each way down the braces, *d* and *d*, back to the chord, A A; here it is again carried to the

upper chord by the ties, c' and c', whence it is again sent down by the braces, d' and d', and so on, until it reaches the abutments at each end. Thus, the principle of the truss is simply that of distribution. Strain is not allowed to concentrate itself at any one point, but is continually shifted and scattered. Hence it is obvious, that the standard for the strength of truss chords must be very much higher than that for mere unassisted similar beams; and the beam which, single, would support one thousand pounds, may suffer with safety the imposition of a far heavier load, if forming the chord of a judiciously constructed truss. Hence there is no necessary contradiction in the assumption previously made of the strength, per square inch, of a bridge chord at 8000 lbs. The beam itself is, of course, no stronger, or more capable of endurance, but it is so disposed, that the load placed upon it is shifted and thrown off. C. E.

P. S.—In my article in the January number occur two or three misprints, which rather interfere with a correct understanding of the text. On page 412, the words, "that of," in the twenty-ninth line from the top, should be omitted. In the thirtieth line, for "E. W.," read "4 W." In the thirty-first and thirty-second lines, for "x," between "xf," and "P," and, also, between "f E," and "W," read "$\times$," the sign of multiplication. In the thirty-fourth line strike out the word "the," before "P;" and in the thirty-fifth line, insert "inversely," between "varies" and "as," and, also, between "is" and "as."

PHOTOGRAPHY.

This art is now attracting much attention from the public, in virtue, not only of the rare beauty of its results, but, of its diverse and infinite applicability to the reproduction of every variety of object. Following appropriately in the wake of the daguerreotype art, it has opened a new field, and awakened a new interest in its growth and perpetuity. The first public dawning of the daguerreotypic art was obscured by the clouds of prejudice and ignorance on the one hand, and distrust and jealousy on the part of artists. It, however, made its way, and, under the guidance of men of taste, skill, and energy, has at length become a recognized and leading feature in the world of art.

It may not be uninteresting to some of our readers to detail the distinction between the daguerreotypic and photographic processes. The daguerreotype, as is well known, is produced by the action of light upon a preparation of chemicals upon the surface of a highly-polished, metallic plate. The reversal of the object daguerreotyped is a necessity of this process. The production of photographs, though similar, differs in the respect that impression is first taken upon a plain surface, and from thence transferred by the action of light, to chemically prepared paper, the transfer again reversing the impression, and thus bringing it back to its original position. The effect upon the glass being durable, the number of impressions may be multiplied to an indefinite extent, at a comparatively nominal expense. This feature is a specially important one, as it affords to clubs, associations, or persons desirous of possessing themselves of portraits of any distinguished individual, ample facilities for doing so. So much for the *modus operandi* of the art. Its advantages, in point of merit, over the daguerreotype, are briefly these: A more delicate softness of tint and transparency of shadow, and an entire free-

dom from the reflected glare of the metallic plates. These, together with certain technical advantages, familiar only to the artist, and the faculty of reduplication, constitute its chief claims to pre-eminence. Its applicability to architectural views, scenery, mechanism, or any object requiring clearness, yet delicacy of outline, is also a prominent feature of excellence.

We look forward, and not far in the future, to the time when the traveller's paraphernalia will be incomplete without a photographic apparatus. Of course the result of this wide practice of the art will be not only to familiarise us with the architectural and scenic features of countries, of which we can now know but little through the medium of verbal or engraved descriptions, but to impel the artist to a more earnest study, and a more correct realization of the importance of truth in art. For, with the perfection of photographic perspectives, the correct and delicate shading of its fairy pencil, challenging their study, and provoking their emulation, artists can not fail to approach nearer to the ultimate standard of excellence—truth.

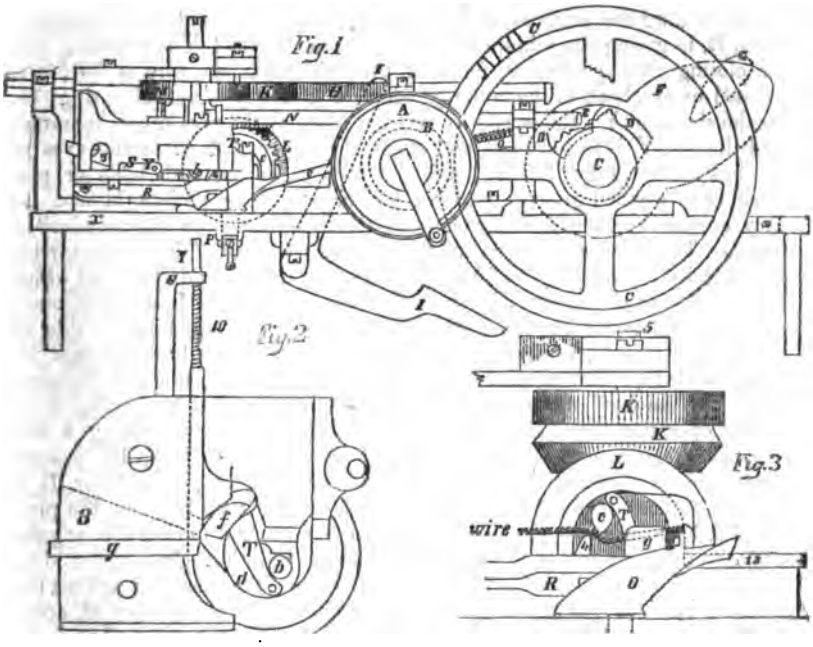
Yet, notwithstanding the great capacity for good which the art possesses, it embodies in no less a degree the elements which may be turned against the interests of art with fatal power. Its assumption by men whose sole object is gain, and its consequent degradation, render it a convenient vehicle for the dissemination and perpetuation of crude and uncultured ideas of art. Unlike the daguerreotype, its susceptibility of being colored, either in oil or water colors, enhances and aggravates the danger. For, if the inferior execution, the degraded pandering to a ridiculous taste for high colors is more generally sought, who can doubt but it will be readily obtained; or who can doubt that the result of such a condition of the photographic art, would entail a serious injury upon the cherished interests of public taste, and a fostering of the love for objects of the beautiful.

The studio of Mr. Brady, of this city, furnishes many fine specimens of the daguerreian art, and this encourage us to hope that his attempts to perfect this new discovery will not be in vain. Indeed, he has already produced some excellent pictures. If he develops its wonderful capabilities, and renders it an aid to the sister arts, and a universal teacher of the true and the beautiful, he will add another to the many laurels he has already won.

White Golden Flint Wheat.—A sample of this superior wheat was exhibited by William Stavely, Esq., at the recent fair in Bucks county, and attracted unusual attention and commendation. The grains were about twice the size of the ordinary white wheat, round and plump; while the color was about the same as the old, and with the millers, a favorite variety. Mr. Stavely informs us that he sowed two bushels on an acre last fall, which produced about twenty-five bushels last harvest. The ground upon which it grew, he does not think the best, and is of opinion that it would have produced about the same amount of Mediterranean wheat. As an evidence of the estimation in which he holds it, we may add that he has put the whole twenty-five bushels in the ground for next year's crop.—*Farm Journal.*

Alderney Cattle.—P. T. Barnum has imported two cows and a bull of the Alderney breed. They came from London in the ship Splendid, and are intended for his farm in Bridgeport, Ct.

MACHINE FOR MAKING CHAIN LINKS.



The annexed engravings are views of an improved machine for making chain links, and were sent to us by Mr. Arcalous Wyckoff, Columbus, Ohio, to whom a patent was granted on the 14th of last February.

Figure 1 is a side elevation of the machine; figure 2 is a detached view, exhibiting on the under side the cutter and bender of the wire in its horizontal movement; figure 3 is a detached view of a portion of figure 1, to show the action of the vertical bender, sleeve, and lever, giving the middle bend of the link. Similar letters refer to like parts on the three figures.

This improvement in machines for making chains consists in giving the grip and middle bend of the link, cutting the wire the requisite length, and bending both ends of it simultaneously, and, by an automatic movement, delivering the formed link ready for joining in a continuous chain.

In figure 1, *x x* represent a solid table. A is the pulley to which the power is applied, carrying on its shaft a pinion, B, giving motion to the driving wheel, C, on shaft, C; D and E are cams on the horizontal shaft, C, for operating the bars, O and N; F is a large cam also on the shaft, C, which, striking against the end of the bar, carrying rack, H, gives an intermittent motion to the pinion, K, placed on a vertical shaft, which also carries a bevel pinion (placed under K for giving motion to L, carrying a sleeve,) on the outer end of which is a bending arm, which, in its semi-revolution, forms one eye of the link; M is a pinion (driven by K) which is placed on a vertical shaft, and also carrying a sleeve, on the end of which is secured the knife or die, *f*, for cutting the wire into suitable lengths, and, likewise, for bending

the other eye of each link; O is a bar moved by cam E, it operates a lever, R, for giving the middle bend to the link, and holding or clamping the wire while being cut by *f*, and stationary die, *g*, also retaining it until the link is formed; N is a bar moved by cam, D, operating the pinion, M, by striking a stud while the wire is cutting; P is a gauge (operated on by a set screw,) for graduating the pressure of the angular end of the slide bar, O, on the lever, R, in giving the middle bend and grip to the link: Y is a sliding bar for closing the opening, 8, figure 2, through which the wire is fed; it is pressed by the back of the cutter, *f*, which contracts the helical spring, 10, on the shank of Y; this spring re-acts the moment the pressure is removed, and the bar, Y, is forced back, and closes the opening, 8, while the eyes of the link are forming; T T are small, flat springs, having stub bolts or pins working in inclined grooves in the ends of the sleeves or pinions, M and L; they are for the purpose of throwing off the link formed on the mandrels, *c* and *b*. The mandrel, *b*, is the one around which the end of the wire is carried horizontally by the die, *f*, in forming one eye; *c* is the mandrel around which the wire is carried vertically by the bender on the sleeve of L, simultaneously with the formation of the other eye on *b*; G is a cam secured on the side of cam F, and, in its revolutions, operating on lever, I, draws back the rack, H, giving a reverse movement to all the pinions except B, the rod, Y, being moved by the back of the die, *f*, permits the wire to be fed in opening 8.

The operation is as follows:—A wire being introduced in opening 8, and held at a slight angle, is forced against the adjustable stop, 12, passing through a guide near to that side; the angular projection, 4, on lever, R, is brought to bear diagonally on the wire, and, forcing it up between the pins, *c* and *b*, by means of cam, E, operating on bar, O, and forcing the angular projection thereon under the lever, R, raises it, and thus gives the middle bend to the wire, and securely clamping it between the pins, and against the plates. The die, *f*, is now moved by the semi-revolution of pinion, M, acted on by bar, N, and cam, D, and cuts off the wire rod the requisite length for a link, at the same time carrying it horizontally around the pin or mandrel, *b*, while the bender on the sleeve of pinion, L, simultaneously carries the other end round the pin, *c*; L receiving its motion from the miter wheel under K, said wheel being actuated by the sliding rack, H, and cam, F, and completes the link. The springs, T T, are now forced outwards by the pins working in inclined grooves on the ends of the sleeves, and thus slide the eyes off the pins or mandrels, *c* and *b*, and the link drops from the machine ready for joining, which may be done by closing the eyes by hand, but much more perfectly by machinery.

This machine, now in operation at Columbus, Ohio, makes about sixty links per minute, or fifteen hundred pounds per day, and bends them ready for use.

LARGE APPLES.—Thomas Pritchard, Esq., of this city, has shown us the finest specimens of apples we have ever seen in any country; many of them measured fifteen and sixteen inches in circumference, and weighed twenty-eight and twenty-nine ounces. Fifteen or sixteen fill a half-bushel measure. These apples were raised by Nathan Robinson of this county, on trees only three years' growth.—*Oregonian.*

MACHINE FOR CHOPPING BRUSH.

A CORRESPONDENT of the *New-England Farmer* gives the following account of an invention of Mr. Daniels, of Vermont, (of Woodstock, we suppose, the inventor of one of the best of hay-cutters,) which he saw in operation on the farm of Col. Stanley, of Methuen. We do not quite comprehend its form, but its efficiency seems very evident. The writer says:

MESSRS. EDITORS: In passing through Methuen, a few weeks since, I had occasion to call on Col. Charles E. Stanley, of that town, when I was shown by that gentleman a machine, or rather, cutter, belonging to him, to which horse-power is applied, for the purpose of cutting limbs and brush at the door. It is called "Daniel's Patent," of Vermont, being very much on the principle of some hay-cutters, only on a much larger scale. Two huge knives, about eighteen inches long, one-half inch thick, and four and a half in width, are strongly fastened on the shaft roll. A good feed roll is also applied. Hard wood limbs, without trimming, that are not more than three inches, or pine that are not more than four and one-half inches through at the butt, are cut with ease. By changing the gearing, they can be cut any length desired, from four and one-half to one fourth of an inch in length. When green pine limbs are cut two inches long and spread upon a floor not more than ten inches in depth, they will dry so as to burn well in a week.

Col. Stanley says he can cut limbs and brush to the above degree of fineness faster than a smart man, with a good yoke of oxen, can haul and dump them from one-fourth of a mile distant. The advantage of cutting it so fine is, that it brings much scraggy and otherwise worthless brush, up to more than the value of its weight in solid wood, which, in these times of scarcity and high prices of fuel, is an object of too much importance to be overlooked. Col. Stanley's neighbors bring brush to him to be cut on equal shares. As near as I could judge, the machine will do the work of forty men.

The reason that the chips dry so quick, is, that they are not cut square off, but obliquely, one side being concave, and the other convex; consequently they are shattered to such a degree, that the air is admitted entirely through them, and the drying process imediately commences. ******

Danvers, Jan. 16, 1855.

MISCELLANEOUS.

THE ORANGE WATER-MELON.—Mr. Peabody, editor of the *Soil of the South*, Columbus, Ga., has lately introduced a new kind of water-melon, and which, from its singular properties, he calls the orange water-melon. By cutting the rind, as you peel an orange, the entire skin may be taken off, leaving the pulp unbroken, which, with a little care, may be divided as you would an orange. The flavor is said to be very fine, and it has proved itself perfectly hardy in this State. Mr. P. will, on receipt of a dollar, forward pre-paid packages of the seed.

GAS LIME.—Who has tried gas lime as a manure, and what was the result? An answer to the above would be of service to many persons. Who of our agricultural chemists can give its virtues, and the method of using it?

ILLINOIS.—Inexhaustible coal mines are found in the south part of the State. Also lead, porcelain-clay, white and gray marble, saltpetre, salt marshes, Epsom salts, and pure alum. Shortly the Illinois Central Railroad, a continuous line of 440 miles, will connect this region with Galena.

A fine quarry of slate is being opened half a mile from the Railroad Depot in Northfield, upon the Land of B. F. Woodworth. It is very accessible, and, we doubt not, of excellent quality for roofing. Some think, from the dip and range, that it belongs to the same quarry with the slate west of the mountain. Who knows the riches of our State?

STEAM GUN IN ENGLAND.—A London correspondent of the *New-York Spirit of the Times* says, that among the many interesting experiments that are daily performed in England, is Perkins' Steam Gun, which just now is attracting great attention. The gun is fixed, and the experiments are made, driving out balls at the rate of 300 to 400 a minute. Mr. Perkins has offered to the English Government to erect a single steam gun that shall take Sebastopol, or any other Russian stronghold, at a distance of five miles. He proposes to send a ball of one ton weight that distance, and with much greater effect than with powder at one-fifth that distance. It is in contemplation, I believe, by government, to give orders for the manufacture of this gun, in order that the experiments may be tried.

EARTHQUAKES AND ELECTRICITY.—The *Boston Traveller* says, that during the forenoon of the 8th instant, when shocks of earthquakes were felt in Maine, New-Brunswick avd Nova Scotia, telegraphic lines in different sections of the country were more or less disturbed by extraneous electric currents, similar to those that uniformly accompany manifestations of the Aurora Borealis; but the disturbance was slight, compared with that which accompanied the eruption of Manna Loa, a volcano on one of the Sandwich Islands, in February, 1852, at which time every telegraph line throughout the country, from Halifax to New-Orleans, and from New-York to St. Louis, was rendered completely inoperative.

IMPROVEMENTS IN PUDDLING IRON.—James Nasmyth, of Patricroft, near Manchester, England, has recently patented an improved operation in iron manufacture, by subjecting the molten metal in the puddling or refining furnace to the action of a current of steam, introduced at its lower portion, diffusing upwards, and thus mechanically agitating the liquid metal, and exposing fresh surface to the oxygen of the furnace atmosphere, which chemically combines with the carbon and sulphur contained in the iron, and deprives it of those impurities. The hydrogen set free is thus in a state to combine with any excess of sulphur, whether present in the iron, or as a product of the combustion of the fuel.—*Mining Journal.*

DURHAM CATTLE FOR SALE.—James W Pearse, of Lancaster, is now in Marion county, with a lot of superior Short-horn Cattle for sale. Several of them took premiums at the recent Fairfield show, and several of the best breeders of that region certify as to their purity of blood and fine points.

We see by the Zanesville papers that Jones, of the "Stacey House," purchased of Mr. Pearse a thorough-bred heifer; and Thos. Hall, of Wayne Township, Muskingum county, another. Mr. Pearse will be recognized as the owner of the celebrated "*Clay Trustee*," and also "*Prince Hal.*"

SIZES OF SHOES.—The *Lynn Directory*, for 1851, says a *size* is the length of one "barley-corn," or one-third of an inch. A size stick is thus formed: Take a rule or piece of pine-wood, thirteen inches in length, and divide it into thirty-nine equal parts of one-third of an inch each. The first thirteen are left blank, and counted nothing. The second thirteen are called men's and women's sizes; each marked from one to thirteen. Thus, nine inches is a man's size, No. 1; ten inches is No. 4; eleven inches, No. 7; twelve inches, No. 10.

THE GREAT BELL OF VIENNA weighs 84,400 pounds, and a small family could live conveniently under the immense structure. Eight men are required to ring it, as the clapper alone weighs 1,400 pounds. In the room with the clock is stationed a man to watch for the breaking out of fires in the city and suburbs. He takes the angle by means of a fine telescope, and on a chart, prepared for the purpose, finds the street and house; and the alarm is then given.

GOLD MINES.—The *Petersburg Intelligencer* gives a list embracing fifteen of the most important gold mines of the State, the aggregate value of which is estimated at $1,700,000. Of these, five are not worked for want of capital, and four, valued at $575,000, are owned by English companies. The great drawback of gold mining in Virginia is the want of adequate machinery—or, in other words, the mines are not rich enough to be profitably worked by the ordinary methods.

DEFORMED ROOTS.—English farmers are much troubled with deformed roots, in their culture of carrots, parsnips, and other root crops. They form what are called fingers and toes, instead of the conical and regular shapes usual in successful root-growing. On a large scale this becomes a serious evil. A great amount of discussion has been had in their papers as to the cause of this difficulty, and the remedy for it.

A late writer in the *Agricultural Gazette* states that the difficulty is in the seed-growing, and not in the root culture. His remedy is to cut out the central umbel, in seed growing, and thus distribute the sap into the lateral ones, when a healthy seed is produced. In this way, "fingers and toes" never disturb him. In using the seed of the central and large umbels, he always gets the deformed roots.—*Prairie Farmer.*

TRADESMEN AND LABORERS.—If any of our readers can furnish employment for good workmen in any branch of industry, we shall be glad to send to them men who are well recommended. Hundreds of good men are still unemployed.

THE SKETCH OF E. B. BIGELOW, ESQ.—The Biographical sketch of this gentlemen, found in this number, is taken, with consent of the author, Nehemiah Cleveland, Esq., from the pages of the *Merchants' Magazine.*

TENNESSEE.—The coal mines at the Bluffs, seventy-five miles from Memphis, (recently discovered) yield the best quality of coal, and are apparently inexhaustible.

NEW ENGLISH PATENTS.

MINING ENGINES AND MACHINERY. A BARCLAY, Kilmarnock. *Patent dated March* 2, 1854.—A portion of the improvements comprehended in this patent relate to the so arranging the winding engines of coal and other mines, that they may be more safely managed than at present, whilst all chance of "over-winding" and injury to the mining mechanism may be avoided. These improvements are effected by adapting the ordinary and well-known "link motion" to the hand-gear of the engine, so that the attendant can easily stop and reverse his engine at the exact moment required in the action of winding. To do this, the engine-man has only to work a hand-lever up or down; and this lever being suitably connected with the "link-motion," correspondingly affects the portion of such motion, and thereby either stops or reverses the engine, as is at present done in locomotive and marine engines. By such a system of gearing, the motion is entirely unbroken, and the attendant has always a safe and perfect command over his engine; and to add still further to the safe working of the system, a self-acting movement is contrived to come into play at the precise moment required, for the purpose of stopping or reversing the engine, in case the engine-man should be careless or absent at the proper time. For this purpose a tumbler is so connnected with the engine or winding mechanism, that it shall be slowly wound up, or elevated to its falling centre, at the time that the motion of the engine is to be changed. Thus, as this tumbler falls over, it acts through suitable connections upon the reversing or stopping-link, and effects the intended movement. Various means may be adopted for securing the self-acting effect, disengaging pins or stops being so set as to actuate the link-movement at the proper time.

As adapted to direct-acting horizontal cylinder winding and pumping engines, for instance a small shaft passes away back from the main-shaft to the steam-cylinder, at which end this small shaft carries a worm in gear with a worm-wheel set on a horizontal stud. This wheel has a ring-groove in its side to receive adjustable stud-pins, which are set at the proper distances in the wheel, so as to act upon the adjusting lever of the valve-link motion. Provision is also made, by a separate adjusting slide or bolt, for allowing the engine-man to set the engine to go constantly in one direction, as when used for pumping. When so set, the adjustable-pins of the worm wheel no longer affect the engine, so as to set the valves for back or forward actions, or the up and down winding. Should the engine accidently run slightly beyond the intended point, an eccentric piece on the stud-spindle carrying the worm-wheel acts upon a sliding piece carried round by the wheel, and this movement, acting upon the under side of the valve-link lever, sets this lever to its central position, so as to prevent the return of the engine. These gearing details are obviously capable of being modified in various ways, and the arrangements are suitable for beam or other kinds of engines. To prevent accidents from the main gearing getting disengaged, a friction-brake apparatus is provided, to stop the engine's movement. Thus, should the wheels fly out of gear—owing, for instance, to the attendant's leaving out the fastening-key when changing from pumping to winding—this friction-strap will be brought into play to prevent the engine from running away. The brake-pulley is set upon the shaft, which is liable to slip back, and being loosely encircled by a friction-strap, the lateral traverse, owing to the disengage-

ment, makes the pulley press itself hard against the interior of the strap. This strap encircles three fourths of the wheel, and is workable as well from both its ends. These two opposite ends are each connected to one of the two opposite cages, that is, the ascending and descending cages. For instance, when one of the cages arrives at its proper stopping point, it acts upon a pin or stop in connection with one end of the friction-strap, and draws the strap tight around the pulley in the direction of the revolution of the pulley at the time being. Hence, whichever way the engine is running, the friction-strap has a tendency to be forced down into frictional contact by the pully movement when once started. The engine-man can also work such friction-brake by a separate hand or foot-gear movement.

Revolver Fire-Arms. J. H. Johnson, 47 Lincoln's Inn Fields, and Glasgow.—The invention of M. Lefaucheux, of Paris, which is the subject of this patent, relates to the class of fire-arms termed "revolvers," and consists chiefly of an improved construction of revolving chamber cylinder, and of a new arrangement of breech, to facilitate the loading of the weapon. The revolving piece is a cylinder, with six or any other convenient number of cylindrical or slightly conical holes bored through it, to form the charge-chambers. An additional hole is bored centrally through the cylinder, for the passage of the spindle upon which it turns, and to which the barrel of the weapon is attached. The charge-chambers are each notched through to the outside of the cylinder at their back edges, to suit the particular description of cartridge employed, this cartridge being made up with the percussion appliance attached in such a manner as to enter and project through the notch of the charge-chamber. The breech of the weapon is hemispherical in shape, and is formed with a vertical groove, in which the hammer works, the hammer rising up centrally from the stock. The face of the breech-piece is perfectly smooth and flat, as is also the end of the charge-cylinder in contact with it. A channel is formed in the breech on one side, through which the cartridges are introduced into the charge-chambers as these are brought round in succession, and a filling-up piece is hinged to the breech to close the channel when the chambers are not being charged, a spring-catch being provided to keep the filling-up piece closed when necessary. In a slide, on one side of the barrel, and in a line with the charging-channel in the breech-piece, is a rod for forcing out the cartridges, if required, without exploding them, or for removing any matter left in the charge-chambers after a discharge. This rod is prevented, by a blade spring, from falling out or moving, unless the hand is applied. The rotation of the charge-cylinder is effected in the usual way, by the action of a catch in connection with the hammer, upon a ratchet formed upon the cylinder, and the cylinder is retained accurately in position during each discharge by means of a catch, also acted upon by the hammer, and made to enter a notch in the cylinder-face after each rotative movement.

Journal Bearings. A. Barclay, Kilmarnock.—With a view of economizing the oil used in lubricating the journal bearings of horizontal shafts, by enabling it to be repeatedly reüsed, Mr. Barclay has designed the improvements forming the subject of the present patent, and which, by preventing the too rapid escape of the lubricating oil from between the rubbing surfaces, also renders the lubrication of the shaft much more efficient. In carrying out this invention, according to one modification, the shaft is formed with a projecting collar upon it, of the length of the intended bearing, and the brasses are

formed to suit this modification. Each brass extends considerably past each edge of the collar, and is slightly turned out or recessed, so that the angles of the collar shall be slightly overlapped by the brass. Beyond this overlap on each side, the extension of the brass is hollowed out internally, to form an annular cup for the reception of oil, and these edge-cup pieces are well overhung, and brought close to the plain part of the shaft to prevent the entry of dirt. The inner face of the upper brass is inclined upwards from each side towards the centre, instead of being square across as usual; and the result is, that the oil supplied from the top, in the usual way, is well spread over the frictional surfaces, and, flowing down, it is caught by the annular cups of the brasses, and retained therein for continued use; or the same effect may be obtained by beveling the inner edge or edges of the inner brass alone, the upper brass being made square across, as usual. The continued use of the oil is effected by the action of the bearing collar on the shaft, for, as this revolves, its edges gather films of oil from the annular cups, and bring up the oil so collected to the top brass. Here the revolving collar edges apply the oil to the corresponding edges of the upper brass, and, owing to the duplex interior incline thereon, the oil is thence conveyed towards the centre of the bearing, whence it is well distributed over the whole rubbing surfaces. Instead of a plain collar projection, other forms of journals may be employed with the same result, or a couple of rings may be set fast on the shaft, so as to carry up the oil in a similar manner.

NEW MUSIC.—WM. HALL & SON.—We would again remind our readers of the fine opportunity now offered of buying music very cheaply. Among the publications offered at reduced prices, we present the following reprints, and new pieces, with the reduced prices: Leonora, a polka; Indiana, a brilliant waltz; Olga Mazurka, by A. Goria; "I Wandered on the Sea-beat Shore," by J. W. Cherry; "Cheer, Boys, Cheer," by Henry Russell; each of which contains five pages, and each is sold at fifteen cents. "Swinging, Swinging, All Day Long;" or, Song of the Old Hall Clock, is a very pretty solo and chorus, by Wurtzel, copyright, at twenty-five cents, nett, five pages.

GENERAL AGENCY.—The publisher of *The Plough, the Loom, and the Anvil*, believing it in his power to be of essential service to the readers of that journal, in the purchase or sale of various articles, and the transaction of various kinds of business, would announce to them that he is ready to execute any such commission which he may receive, including the purchase of books of any description; implements connected with agricultural, manufacturing, or mechanical operations; artificial manures; farm and garden seeds, etc., etc. One of the gentlemen connected with the journal is a proficient in music, and experienced in the selection of piano-fortes, flutes, etc., and will execute orders in that department.

He will also act as agent in the purchase and sale of Real Estate.

☞ Particular attention to business connected with the Patent-Office.

Letters of inquiry on these matters will be promptly attended to.

SCHOOL-TEACHERS. — Having had occasion to furnish teachers for some of our Southern friends, we have been fortunate enough to learn of several young ladies who are admirably well qualified for families or schools, and if any are in need of such, a letter addressed to us will receive immediate answer. We shall not fear to guarantee that any reasonable expectations will be fully met. Some of them are desirous of going South.

List of Patents Issued

FROM JAN. 2, TO FEB. 6, 1855

Thos. H. Barlow, Lexington, improvement in fire-arms.

Jarvis Case, Springfield, Ohio, improvement in seed-planters.

John S. Barden, New-Haven, for water metre.

Jotham S. Comant, New-York, improvement in sewing machines.

Wm. C. Hooper, of Pittsburgh, for bench plane.

Edward H. Graham, Biddeford, Me., improvement in fire-arms.

John H. Allen, Bidleford, Me., improvement in temples for looms.

John S Addison, New-York, improved gold washer and amalgamator.

Alfred C. Carruth, Hanover, Mass., improvements in plugs for lubricating axles.

Michael D. Dyott, Philadelphia, improvement in lamp shades.

John C Kline, Pittsburgh, improvement in door-latch locks.

Arnton Smith, Macoupin county, Ill., improvement in plows.

Samuel H. Robinson, Baltimore, improvement in lime kilns.

Geo. M. Ramsey, Newark, for moulding machine.

Alonzo D. Perry, Newark, improvement in fire-arms.

Lucius Paige, Cavendish, Vt., improvement in brake blocks for railroad cars.

Jno. L McPherson, New Vienna, O., improvement in scale.

Hezekiah B. Smith, Lowell, improvement in sewing machine.

C. B. Morse, Rhinebeck, for moulding machine.

Elisha P. Beckwith, New-London, improvement in spring balances.

Abijah R. Tewksbury, Boston, for improved steering apparatus.

Parley Hutchins, Norwich, Mass., improved handtruck.

O. B. Judd. Little Falls, improvement in grain and grass harvesters.

John A. Pitts, Buffalo, improvement in straw cutters.

R L. Hawes, Worcester, for machine for making boxes of paper.

Elijah Morgan, Morgantown, Va., improvement in seed planters.

John F. Masscher, Philadelphia, for stereoscopic medallion.

Hezekiah Conant, Hartford, improvement in moulds for casting projectiles.

John Sutton, New-York, lubricator for steam engines.

Steph n L. Stockstill, and Peter H. Humes, Brandt, O., improvement in seed planters.

Gustavus Wissenborn, New-York. Improved arrangement of filtering apparatus to prevent incrustation in steam boilers.

John T. Willmarth, Northbridge, Mass, improved dies for making bolts.

Wendell Wright, New-York, improvement in mode of connecting pipes for steam boilers.

Ambrose Foster, Portland, Wisconsin, and Elizabeth A. Messinger, administratrix, and Wm. Spencer, administrator of John A. Messinger, deceased, of Milwaukie, Wisconsin, assignors through said administratrix, and administrator to Ambrose Foster, aforesaid, improved building block.

Wm. Leighton, Cambridge, Mass., assignor to the New-England Glass Company, of same place, improvements in door knobs.

Wm. M. Sonwill, Camden, Del., improvement in hernial trusses.

Wm. Shaw, Boston, improved gas heater.

Solomon G. Booth, New-York, improvement in rollers for corrugating sheet metal.

George A. Brown, Middletown, R. I., for hay-making machine.

Henry J. Bruner, Nazareth, for improved instrument for cutting out stone.

Dexter A. Chamberlain, and John Hartshorn, Boston, improvement in rollers for curtains.

George R. Comstock, Manheim, New-York, improvement in carriage seats.

George R. Comstock, Manheim, New-York, improvement in carriage seats.

George R. Comstock, Manheim, New-York, improvement in carriages.

James Eccles, Philadelphia, improvement in looms.

Henry A. Frost, Worcester, improvement in means for holding window-blinds.

Louis Francis Groebl, Philadelphia, for improved marquetry.

Michael Greenbaum, Chicago, for improved hot air furnaces.

Wm. H. Harn, Carlisle, Pa., improved mill for cutting and grinding vegetables.

Wm. Ives, Buffalo, for book brace.

Samuel G. Jones, Pittswater Town, Pa., improvement in lifting jacks.

Charles Metiam, New-York, improvement in rolling iron shutters.

Daniel Newton, Southampton, Conn., improvement in metal folding machines.

Horace W. Peaslee, Maiden Bridge, New-York, improvement in machine for washing paper stock. Patented in England, September 20, 1854.

Albert W. Roberts, Hartford, Conn., improvement in fire engines.

E. K. Root, Hartford, for improved compound rifling machines.

Eloy Schmits, New-York, for improved apparatus for supplying furnaces with pulverized metal.

R. P. Benton, Rochester, improvement in feeding mortising machines.

Isaac J. Cole, Clermont, for improved compound crowbar.

Abel W. Streeter, Shelburne Falls, Mass., improvement in fastening centre bits.

John Sutton, New-York, for lubrication of steam machinery

Lewis Hoover, Jersey City, improvement in lanterns.

Henry Blakeley, New-York, improvement in iron window blinds.

Geo. Copeland, Lewiston, Me., improvement in looms.

Isaac Williams, and Isaac W. Bausman, Allegheny county, Pa., improvement in cotton seed planters.

Samuel Huffman, Charleston, Illinois, assignor to himself and Dennis O'Hara, Washington, D. C., improvement in repeating cannon.

Edmond Morris, Burlington, N. J., improvement in buckets for chain pumps.

Leopold and Joseph Thomas, Alleghany City, for match machine.

John U. Wallis, Dansville, New-York, improvement in paddle wheels.

Geo. F. Wood, Ulysses, New-York, improvement in oscillating engines.

John M. Bull, Sidney, O., improvement in handrails for stairs.

Newell A. Prince, Brooklyn, improved fountain pen.

I. J. W. Adams, Sharptown, Md., improved implements for boring wells.

Wm. Adamson, Philadelphia, improvement in clarifying glue.

Abel H. Bartlett, Kings Bridge, for hot air furnace.

B. F. Rabbitt, New-York, for car ventilator.

John Blackwood, Franklin Co., Ohio, improvement in seed planters.

Jacob Brown, Lawn Bridge, Ill., improvement in seed planters.

Dexter H. Chamberlain, and John Hartshorn, Boston, fountain brush.

Alfred Doe, Concord, improvement in plows.

Jas. Eaton, Townsend Harbor, Mass., improvement in dies for cap-tube machines.

George Fowler, Northford, Ct., for double-acting force pump.

Hezekiah Griswold, Hartford, improvement in the yoke of shirts.

Jonathan Hibbs, Tullytown, Pa., improvement in clover hullers.

Alex. Hall, Lloydsville, Ohio, improvement in piano fortes.

John Hobbs, Hallowell, improvement in rain staff screws for ship carpenters.

Washburn Race, and Birdsill Holly, Seneca Falls, improvement in carriage wheels.

R. Jennings, Deep River, Ct., improvement in augers.

Wm. H. McNames, Philadelphia, improvement in locking spindle door latches.

Sidney S. Middlebrook, Jas. R. Blakslee, and Charles F. Blakslee, Newton, Ct., improvement in machinery for felting hat bodies.

J. B. Nichols, Lynn, improvement in sewing machines.

Aaron Palmer, Brockport, improvement in the construction of the frame of grass harvesters.

Elijah F. Parker, Proctorsville, Vt., improvement in lantern frames.

Jesse Reed, Marshfield, improvement in cable stoppers.

Henry Rogers, Ferrisburgh, Vt., improved force-pump.

David Russell, Drewersburg, Ind., improvement in harvester cutters.

Alex. O. H. P. Schorn, Murfreesboro, Tenn., improvement in portable fire-arms.

Thaddeus Selleck, Greenwich, Ct., improvement in methods of working Franklinite ore.

John Skelley, Brooklyn, improvement in carriage wheels.

Geo. L. Squir, Chicopee Falls, improvement in straw cutters.

Joseph Stockdale, Ypsilanti, improvement in cultivator teeth.

Jonathan G. Trotter, Newark, N. J., improvement in the construction of furnaces for zinc white.

Henry G. Tyler, and John Helm, New-Brunswick, N. J., improvement in processes for making india-rubber cloth.

Elisha Waters, Troy, improvement in cylindrical boxes.

Salem Wilder, Lynn, improvement in waxing thread in sewing machines.

Pinney Youngs, Milwaukie, Wis., improvement in sewing machines.

James S. Ewbank, New-York, assignor to Wm. Everdell, Jr., of same place, improvement in spurs.

Edwin A. Morrison, Lawrenceville, Va., assignor to himself and Robt. J. Morrison, Richmond, Va., improvement in delivering apparatus of grain harvesters.

George A. Meacham, New-York, for window washer.

John Bean, and Benj. Wright, Hudson, Mich., improvement in smut machines.

W. C. & J. S. Burnham, New-York, improvements in double-acting force-pumps.

John H. Bloodgood, New-York, improvement in manufacturing seamless felt goods.

David N. S. Coffin, Jr., Lynn, improved daguerreotype holder.

Nelson B. Carpenter, and John Powers, New-York, improved lifting jacks for moving rail bars.

Richard Deering, Sr., Louisville, for current water-wheels.

Geo. W. Geisendorff, Indianapolis, and Jacob C. Geisendorff, Cincinnati, O., improvement in axle box rollers.

John S. Griffiths, Huntington, Pa., improved corn and cob crusher.

F. B. Bant, and Ellis Nordyke, Richmond, Ind., improved wire cloth bolt.

Birdsill Holly, Seneca Falls, improvement in elliptical rotary pump.

Daniel Haldeman, Morgantown, Va., improved burglar's alarm.

Alpheus Kimball, Fitchburg, Mass., improved machine for repairing roads.

S. E. Pettee, Foxborough, Mass., improvement in pressing hats and bonnets.

Robt. A. Smith, and John Hartman, Jr., Philadelphia, improved street-sweeping machine.

Wm. M. Storm, New-York, improvement in steam generators.

Joel Weigle, Swan Station, Pa., improved crushing and grinding mill.

Wm. B. Carpenter, New-York, improvement in the combined chair and crib for children.

John Cochrane, Baltimore, improvement in locomotive trucks.

V. P. Corbet, Corbetsville, New-York, improvement in constructing ships and other vessels.

Thomas Champion, Washington, improvement in making steam boilers.

Henry Glynn, Baltimore, improvement in manufacture of paper pulp.

James A. Gray, Albany, improved sounding-board for piano fortes.

James H. Maydole, and Albert W. Morse, Eaton, N. Y., improvement in grass harvesters.

Isaac M. Singer, New-York, improvement in sewing machines.

James A. Taylor, Alden, New-York, improvement in mop-heads.

Isaiah M. Williams, Blanchester, O., improvement in butter workers.

Cyrenus Wheeler, Jr., Venice, New-York, improvement in grain and grass harvesters.

L. W. Fiske, Louisville, improvement in compositions for bleaching and stuffing leather.

L. W. Fiske, Louisville, improvement in working lime vats and tanneries.

Hazen Webster, Ogdensburg, improvement in churns.

Geo. B. Ketcham, Bedford, Ind., improvement in mechanism for retaining cars upon the track.

J. G. McFarlane, Perry Co., Pa., improvement n seed planters. Patented, March 14, 1854.

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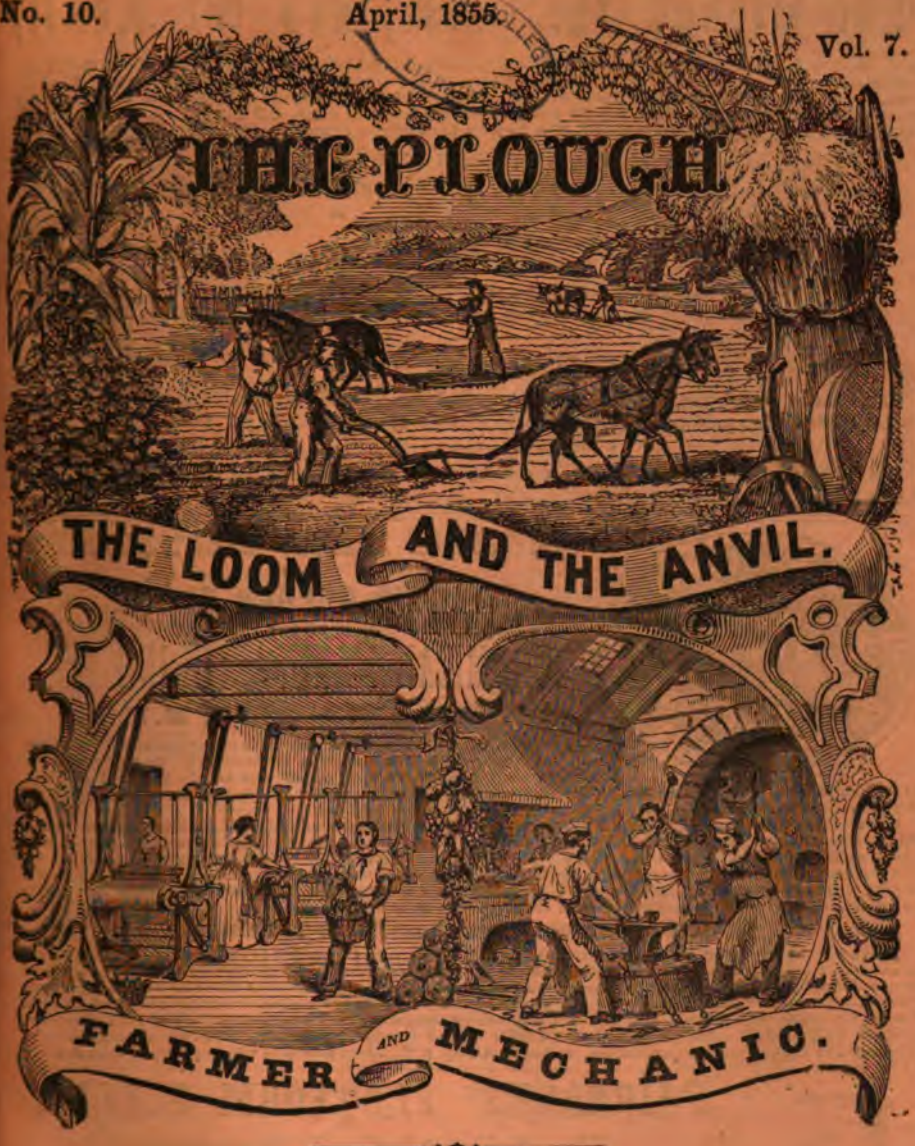
No. 10. April, 1855. Vol. 7.



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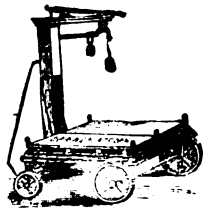
HURD'S HAIR RESTORER.—This preparation seems to be efficacious for the restoration of the hair upon bald heads. We have seen the testimony of persons well known to us, who have used the compound successfully, thereby corroborating the opinion of its restorative energy. We know of nothing more desirable in the way of personal comeliness and comfort than a good head of hair, and any process by which this crowning ornament of the outer man can be preserved or recovered when lost, without, in the latter case, a resort to Wigs, Toupees, and Scratches, deserves to be hailed and embraced with gratitude by all of either sex who are unlucky enough to need its benefit.

HURD'S GOLDEN GLOSS FOR BEAUTIFYING THE HAIR.

This preparation is highly perfumed; it gives to the hair a dark, soft, glossy, and lively appearance, which cannot be obtained from any other article. It effectually cleanses the scalp from Dandruff and Scurf, and keeps the head clean and healthy. It prevents the Hair from falling off or turning grey, and inspires it with new life and vigor; and while it adds beauty will relieve pain, for it is an almost certain remedy for all cutaneous diseases, such as Scald Heads, Erysipelas, Salt Rheum, &c., and will also relieve sympathetic attacks of Nervous and Sick Headache. HURD'S HAIR RESTORER $1, and the GOLDEN GLOSS 25 cents the bottle, at retail by Druggists generally. Wholesale, by the Chemical Manufacturing Co., 298 Broadway, N.Y., where all orders will be promptly attended to.



FAIRBANKS' PLATFORM SCALES,
The Acknowledged Standard!
VARIOUS MODIFICATIONS, AS
RAILROAD SCALES, HAY SCALES, AND CATTLE SCALES,
WITH IRON LEVERS AND STEEL BEARINGS, FOR FARMERS' USE.
IRON SCALES, &C., &C.

New-York State Agricultural Society's State Agricultural Rooms, Albany, Feb 20,

At the Show of the Society, held at Buffalo, in September last, a *Cattle-weighing Machine* was exhibited by Messrs. T. & B. Fairbanks & Co., of St. Johnsbury, Vt. The Scales of Messrs Fairbanks were selected as most likely to give satisfaction to the exhibitors of fat cattle. The judges appointed on miscellaneous articles awarded the first premium of the Society for the machine which was erected by them,—and the judges on fat cattle, who intended the weighing of all cattle exhibited, expressed their approbation of the great accuracy of the machine.

BENJ. P. JOHNSON Cor. Sec.

Sold and Warranted by FAIRBANKS & Co., 89 Water Street, New-York.

The Plough, the Loom, and the Anvil.

Vol. VII. APRIL, 1855. No. 10.

MANAGEMENT OF FAIRS—SYSTEMS OF PREMIUMS—WHO DESERVE THEM?

We gave our views on this subject at some length, in our February number, but rather in general than in detail. The subject of premiums was discussed, and, in reference to the policy of the plan now generally adopted, it was contended that premiums are not for the particular benefit of those who obtain them, but that they are offered for the sake of their influence in securing a good exhibition. We now would very modestly suggest the expediency of a thorough change in this system of premiums.

But, before we enter farther upon the subject, we must insist on this: That a plan which is the best here or there, may not be the best plan, or even a good plan, everywhere. We are, by far, too much inclined to be imitators. This tendency often is good; sometimes it is ruinous. It may have been well, hitherto, to adopt the present system of premiums, but we have little doubt that there are sections of country where a change of system would operate beneficially. It may be that such sections are numerous and extensive.

We have shown, we think, that the premium was originally proposed as an inducement to those whose example was worth something, to attend our fairs with the products of their industry. Perhaps those who were in advance of their neighbors, in their style of farming, etc., and who would not expect to gain anything important at such gatherings, needed this almost absolute guaranty that they should make something out of such attendance. Men are selfish, even the best of them. But even selfishness exhibits itself in different forms, and may be controlled by other propensities, good or bad. Men are fond of showing the products of their own skill. How many there are whose "geese are all swans," who think no other person ever succeeded in this, that, and the other, quite so well as themselves. This is a weakness. But there are forms, variations, and modifications of this passion, some of which are highly useful to others, and are destitute of any trace of wrong. These propensities may sometimes very properly be encouraged.

What is it, under the present system, which draws exhibitors to the fair? Sometimes it is the least commendable form of this conceit; the mere love of self-laudation. They did not adopt any improved mode of cultivation, but, by some fortunate concurrence of favorable circumstances, the crop turns out much better than the average, and the result is, an exhibition of it. The

chance for a little money, in the shape of a premium, is also worth something, and, on the whole, the decision is in favor of the show.

Others make a calculation beforehand. They say, "here is good soil. Now I will do my best—expend a little extra money in guano and superphosphates, and get it all back, and more, too, in the value of the crop and the premium." This is better—it is good—positively commendable; but it is not the best.

The best and most worthy motive is, to become acquainted with, and to disseminate, the true principles of crop-growing; to develop the science of farming; to make for one's self, and for others, substantial, permanent progress in agriculture. A large crop a single year is no proof of good farming. But large crops for successive years, leaving the land in still better condition for the year to come, this is the true application of science to agriculture.

What hinders the attendance of nine out of ten of those who produce what is worthy of notoriety, and who yet absent themselves from our fairs? We do not hesitate to say, it is the EXPENSE which would thereby be incurred. "It will not pay," is the common form of expression. But this does not mean "it will not put money in my pocket;" but it does mean "it will take money out;" and more money than the amount of gratification it will secure is worth, or more than I can afford. If this is so, what is the plain, the obvious mode of overcoming this objection? Manifestly, to say to such, "It shall not cost you a mill."

Here, then, you have our proposed modification of the system of premiums. Say to all within your "jurisdiction," whoever will present anything on such occasions, which the committee shall deem worthy of exhibition, shall have all his necessary expenses paid to him *on the spot;* or his expenses on the ground shall be paid by the society, without cost to the exhibitor, in the time and manner they may have previously arranged, but his expenses in arriving and returning shall be paid at the close of the fair.

A similar plan might be adopted in reference to still more useful operations. We refer to the proper management and accurate record of useful experiments on a farm. Suppose, for example, the proper authorities should seasonably announce that all experiments, as to the most efficient mode of rendering sandy soils, similar to those prevailing on Long Island, or those in Georgia, fertile and productive for crops of wheat, or other given product, of the details of which, with all its proper antecedents, a minute diary shall be kept, as prescribed, duly authenticated, shall be entitled to so much, or to a reasonable premium, how much more instructive those operations would be.

The experiments now given to the public, even by skillful farmers, are of little value to science. So much is omitted that the importance of the facts stated can not be properly estimated. By well known mathematical rules, if three quantities, bearing certain relations to each other, are given, a fourth can be found. But these experiments would have us determine a result, hitherto unknown, by scarcely giving us ONE exact known quantity. They tell us that the land was a "rich loam," or clayey, or peaty, and that they put on certain manures. But they give us no analysis of the soil; no careful record of previous crops and former cultivations. Perhaps the application now made rendered soluble some fertilizer, applied years ago, but in an insoluble form. Perhaps the very *rocks* have contributed valuable elements. We have seen many instances of that kind, when not a spade or hoe had been applied. The magnesian rock, or argillaceous slate, or the feldspar, or something else, was doing much more than was dreamed of; or, perhaps, some phosphate, hitherto insoluble, was now rendered efficient; some lime-

stone decomposed; some—no matter what, so long as, whatever it is, small or great, all is unknown. There may have been no such agencies, but we do not know that it is so. To farm by such science, with scarcely one known quantity, is to tax the farmer with problems which the mathematician would never attempt to work out. One might as well write a correct biography of a man, when he has only had an imperfect account of his appearance and deportment, for a few days only, from one not familiar with the character of the subject to be described. Such, too often, is the actual condition of our farmers in their daily toils by which they gather all their income.

We have not wrought out the prominent idea here urged by an effort of our inventive faculties in our own sanctum. The thought is suggested by other operations that have proved eminently successful. For example. What kind of lotteries are most eagerly sought for by the masses of the people? They are those which have, or profess to have, as many *small* prizes as there are tickets. Those "gift enterprizes," all offer something to every number—there are no blanks—and they are eagerly sought after, whenever the people have confidence in the operators. We do not know of an exception among them all. In these, we admit, was the additional hope, the one chance in a thousand or more, of getting something great. But the features which made those people who never buy in other lotteries willing to incur this "risk," was that feature in it which secured them, as they supposed, from loss in any event. It is not the lottery alone which can array such efficient motives before the minds of men. There is no magic power in the lottery to urge men to action. The same controlling agency can as well be applied to a cattle show, or exhibition of crops, or of machinery; or, rather, we would say, it can not rightfully be overlooked, whenever we would determine the best method to excite the general attention of a community, especially when they do not properly appreciate the more substantial benefits which may be thereby secured.

Modifications of this plan might sometimes be desirable. If practicable, a moderate list of premiums, as now offered, might be retained; or even the entire list, if there is money enough, but only in subordination to the other mode of expenditure, and to be paid *after* all such bills are satisfied. The balance might then be divided, on some certain graduated scale, among the most deserving contributors. "Honorable mention," and the like, might also form a part of the system, as at present.

But what inducement has my neighbor, A., to offer anything at our fair, when he has already been assured that neighbor B. has produced, and will exhibit, something better? Neighbor C. is in the same condition. Hence, B. and C. both stay at home, and A. only exhibits; and, as nobody but A. exhibits, therefore nobody goes to see the exhibition. But, if A. and B. and C., etc., were going to exhibit, and made some little noise about it, they would awaken a general desire among the people to attend, and our fairs would be thronged.

WHO DESERVES THE PREMIUM?

We need not say, that it might happen that B. or C., whose products are less valuable than A.'s, are both better entitled to a premium than he. Is he the best farmer, who, in a single season, forces out of his grounds the *greatest* crop? BY NO MEANS. A.'s grounds are in good condition. He bought them recently of one who took proper care of them, and all he has done is just to plant his seed, and, without especial skill or extra labor, let

his crop grow. And he finds in the fall, taking the affidavit of his *hired* man as evidence, that he has grown one hundred and twenty bushels of corn to the acre. Any fool might have done the same. Or, perhaps, he has been lavish in his expenditures on a given lot, doing what no one but a very rich man can do. But B. owns a farm consisting almost exclusively of sand. Still he is resolved to make a good soil, and hence he collects his leaves, and his turfs, and his clay, and his lime and ashes, and mixing all these with the strong products of his hog-pen, and with his manure-heap, and carrying out a thorough system of ploughing, and mixing, and a judicious growth of crops, on land that had produced only eight or ten bushels of wheat, or twenty or thirty of corn, he has grown forty or fifty of wheat, and eighty or ninety bushels of good corn. Who best deserves a premium for these crops? Who is entitled to the highest reward for good farming, from those who would reform our agriculture?

Is it said "we have offered a premium for *the greatest crop?*" Indeed? Do you give premiums, and "the highest premiums," for unwise, unscientific farming—for farming that costs, in the end, more than the value of the crops—for farming in which, if your hired man persisted, you would discharge him?

Some exhibitors buy their land already prepared for them, and thus secure "the best crop." But why pay a man for *buying* a good farm, or why *reward* a man for planting corn on good land, when he has it at command, while he does not exhibit any skill in his calling. Of course, if he has good land, he will use it; and, if he uses it at all, we might almost say, he will not fail of a good crop. But reformers should not give honor to a man for malpractice. No reward should be given for that, which, in its production, does not furnish evidence of peculiar skill, and is not worthy, EMINENTLY WORTHY OF IMITATION. If A. has, for a series of years, kept his land in good trim, so as always to produce good crops, reward him for it, if you will; but we insist that no "premium" should be paid for anything that is not, all things considered, worthy of especial commendation. One may be willing to pay expenses for a pleasing addition to a show, which otherwise may fail to attract general attention, when he would not be willing, as an agriculturist of skill and discernment, to declare that *for such a production*, the grower is entitled to be SINGLED OUT from all other competitors, and receive a premium, or be honored by a proclamation of "well done," to the neglect of a score of others, more industrious, and better informed, and, *in the end*, more successful, than he.

We have just laid down an exchange which illustrates our ideas on this branch of the subject. The editor says, in substance, that he has taken pains to get "the cream" of the doings of the agricultural societies, in his state, (Vermont,) and then "making a report in part," he proceeds to give a statement of a few of the sums paid as premiums to sundry exhibitors, and *attempts nothing else*. If this is "the cream," we don't care for the skim milk. But this is not the cream, nor even the skim milk. It is only the old horse that brought the milk to market. He wholly misapprehends his business as a teacher of good systems of agricultural labor and production, who teaches such doctrines. The premiums are the bait to draw public attention. The *mode of cultivation* is the prize to be won; and, if the matter is so managed, that *this* is not worthy of attention, then the whole concern is not worth a straw, and such societies may as well disband.

We do not think it well to honor with a medal, or its value in coin, the mere production of an extraordinary growth. If one has, by skill, produced

a soil capable of honestly sustaining a wonderful crop, HONOR HIM. Bestow upon him that meed of praise of which kings may not be worthy. Hence, we would not offer a premium for that cultivation that happens to produce the greatest number of bushels, without reference to the antecedents. That same state of Vermont, in the county of Windsor, recently presented a case bearing directly on this point. Two competitors for the prize, for the greatest crop of corn, reported exactly the same quantity per acre. Which shall have the "first prize?" To us the problem is perfectly simple—he who contended most skillfully against obstacles and embarrassments. But that point does not appear even to have entered into the minds of that committee.

We know not where to stop in writing on this subject. We commend these thoughts to all our agricultural societies. They have done like other societies long enough. We are fully persuaded that our annual shows are not managed as they should be; that, besides the personal favoritism sometimes exhibited, there is great want of judgment displayed in assigning premiums, and in awarding them; there is a great want of preparatory labor on the part of managers, in taking suitable measures to secure a good show, which is a most crying sin; and there is a great, even a fatal, want of means to make the good secured useful to the community. Here, inviting discussion on this whole subject, we pause for the present.

FLAX.

We have often commended this growth to the attention of farmers, and for the purpose of giving them the views of different writers, more or less familiar with the subject, we take from the *Valley Farmer* the following article, which we regard as worthy of careful attention. After commending this crop as one promising large and certain profits, the writer proceeds thus:

"The usual practice is to raise on the same piece of land, a crop of wheat one year, and the next year flax; sowing the flax early, so as to have it out of the way for the early wheat sowing, and after the wheat is taken off, the stubble and a good stock of clover is turned under by a fall ploughing. There are farmers that have pursued this course for twenty years, without exhausting the soil, and always reaping profitable harvests every year, avoiding the loss of every alternate year in summer fallowing, as is usual with most farmers. The flax crop, when sown thin, as is the practice when raising it for the seed, leaves the land in fine condition for almost any other crop—a fact which is not generally known or appreciated.

It is a very common practice to sow barley and flax together, as they mature and are harvested at the same time, and can be thrashed together, and the two very easily separated with suitable screens in the fan. This practice is meeting with much favor, and is said to be a very profitable method of cultivating both barley and flax-seed. Indeed, some farmers assert that the yield of flax-seed is not diminished by the growth of the barley, nor is the yield of the barley less on account of the flax-seed. But we give these items, more for the expectation that every farmer will make tests for himself, than that he will take the statements as settled facts for all kinds of farms in all localities. But nothing can be more certain than that the farmers throughout the entire West—the length and breadth of the Mississippi Valley can make the cultivation of flax-seed a very profitable crop, not second in value

to wheat, corn, or any other—the seed always commanding ready sale for cash, at high prices. It is a remarkable fact, that the demand for flax-seed has increased for the last year from one to two hundred per cent. The "Latourette Oil Works," of this city, completed and in operation the last year, are capable of consuming one hundred and fifty to two hundred thousand bushels per annum. The proprietors of these works are offering to contract largely, and offering every inducement to farmers to turn their attention more generally to the cultivation of flax-seed. The Collier Lead and Oil Works, of this city (H. T. Blow,) also consumes about as large a quantity of flax-seed annually. In addition to this, there have been several oil mills erected this past year, within the range of country trading with this city. We subjoin some practical directions.

NATURE OF THE SOIL.

Almost any kind of soil will grow flax-seed successfully, especially such as are adapted to wheat. If sown on rich bottom lands, you get a luxuriant growth of straw, but not so much seed as when sown on upland. Clay, hardpan, or sandy lands, are better for a good yield of seed, though rich loam, or prairie lands are good, especially if they are rolling and well drained. It must be borne in mind that a selection with a view to a good crop of seed is quite different from one for a good crop of fibre—the one requiring a harder, dryer soil; while the other should have a low, rich, moist land. A dry season is favorable to a crop of seed, while a wet season is almost indispensable to a good crop of the fibre.

PREPARATION OF THE GROUND.

The ground for flax-seed should be ploughed the fall before, and again in the spring, and finally pulverised with a heavy drag. Thorough deep ploughing and pulverising the earth, as far as possible, should never be neglected. The seed should be sown broadcast, and should have as light a covering of earth as possible, and, to this end, a brush should be used instead of a drag, so as not to cover the seed too deep. The field should be laid off in furrows or *lands*, and trenches run with the plow to carry off the surplus water.

TIME OF SOWING.

It may be sown as early in the spring as can be done with safety against frost. Many persons pay no attention to frost, and sow quite early, some even sow it on the snow in February or March, as about nineteen cases in twenty the frost does not injure it; but there is a particular stage of the growth of the young sprout, when, if the frost takes it, it will perish, which gives the preference to ordinary spring sowing. If not sown till rather late in the spring, it frequently does not get sufficient growth before dry weather overtakes it. Therefore, sow late enough to avoid frost, and early enough to secure early spring rains.

KIND OF SEED.

Particular attention should be taken to get large, full, and well-matured seed for sowing. Where the crop has been very thick on the ground, the stalk is pale and weakly, and does not afford sufficient maturity for the berry, and seed from such a crop should always be avoided. The best plan is to have one corner of a field sown on purpose to get seed for sowing the next year; and on this corner the less seed you can get evenly scattered over the

ground, the more vigorous and matured will be the stalks and the seed. There are different varieties of flax-seed, and some are preferable to others for their seed yielding and oil producing qualities. But it is so difficult to get any pure species, it is, perhaps, better to disregard varieties, and select seed for its apparent goodness. Always sow pure flax-seed, without any mixture of foreign seeds. Too much care cannot be taken on this point. Be particular to riddle out all yellow grass, cockle, mustard rape, or other seeds, and starting with a pure seed, you will have no difficulty with foul stuff, and will always have the greatest yield per acre, and obtain the highest price when you market your seed.

QUANTITY OF SEED.

Much difference of opinion exists in regard to the quantity of seed to be sown per acre, but the probability is, that the quantity should be varied according to the condition of the ground, season, &c. The most successful raisers practice very light sowing, some even as low as eight quarts per acre; but a fair average quantity, for all farms and all circumstances is, say from twelve to twenty quarts, when the crop is cultivated exclusively for the seed —thus securing plenty of room for the stalks to stand upon the ground and spread out their branches, and give the sun access to their roots, and securing strength of earth for nourishment and maturity of the stalk. When sown thin, the stalk branches nearly down to the ground, and each branch is loaded with bowls. When sown thick, the stalks are spindling and weak, and often have but a single berry on the top, and, perhaps, no seed at all, besides exhausting the soil to a wonderful rate. A piece of ground that has been burthened with a thick mass of flax fibre, is good for nothing for years after. When sown thin for the seed, the fibre is very short and coarse; and in the new linen process, as well as for the paper mills, is quite equal to the fine fibre. In Ireland, where the finest linen is produced, it is not uncommon to see as much as twelve bushels of seed sown to the acre, so that the stalks are little above fine threads, growing up through each other in a dense mass, and producing no seed at all. In Russia, the German States, and other portions of Europe, and in India, the quantity sown is regulated more to a view of both seed and fibre, and the quantity ranges from $1\frac{1}{2}$ to $2\frac{1}{2}$ bushels per acre.

TIME OF HARVESTING.

Flax-seed should be cut before it is ripe, when the boils are beginning to pass from the yellow to the brown color, and it is better to let it lie a few hours if the weather is dry, before binding it up, so that the seed can fill and ripen from the nutriment remaining in the stalk. If it is left standing till it is quite ripe, a large proportion of the seed will be lost in gathering the crop.

MANNER OF GATHERING.

The crop can be cut with the cradle, or in any of the usual modes. After laying in the swath a few hours, it should be bound up in bundles and put in stack, or barn, secure from the weather. Some farmers mow the crop the same as hay, and handle it in bulk; but the best way is to cradle, rake, and bind in bundles.

THRESHING—TIME AND MODE.

It should be threshed as early in the fall as possible, and in a time of dry weather, for if it lies too long, the seed is apt to adhere to the shell, and is more difficult to thresh and clean up, and for the same reason, it should not be threshed in damp weather.

CLEANING UP AND MARKETING.

The seed should be cleaned up on a barn floor, and in still weather. When it is cleaned up in the field, or when the wind is driving dust about, the dust and dirt gets in with the seed, and a great deal adheres to the seed, in spite of all efforts to clean it with the fan, causing it to look dull and dusty, and the oil makers will not buy it as prime seed. When it is cleaned up and ready for the market, it should be put into new, strong bags; for there is no other seed, or grain, that will creep out of so small a hole, or that is so likely to burst the bag. If the seed is plump and clean, and your half-bushel is correct, you will find that it will more than hold out by weight. The standard weight of a bushel is fifty-six pounds, and you will find that prime seed will go sixty pounds."

THE FLAX MANUFACTURE.

The effect of the present European war on this great branch of agricultural products, was discussed at the annual meeting of the society for the promotion and encouragement of the growth of flax in Ireland. The views there presented ought to have an interest in the minds of our farmers. We copy the following paragraph, in relation to this subject, from *The Practical Mechanic's Journal.*

"The proceedings of the meeting just held at Belfast, under the presidency of the Marquis of Donegal, hold a conspicuous position in the more important affairs of the day, embracing the several heads of the effects of the war on our flax culture, and the proceedings taken by the committee thereon—the Irish flax crop of 1854, the operations of the year, markets in new districts, saving of seed, the recently patented systems of steeping, unsteeped flax fibre, conversion of flax tow into wool, scutching machines, new scutch mills erected, new varieties of flax, intercourse with foreigners, exports of Irish flax and tow, and a special report by the "Belgian Instructor" on the growth of hemp. The question as to the effects of the Russian war on this trade, necessarily assumes a serious aspect, when it is remembered that out of an imported aggregate of 80,000 tons of flax, nearly 60,000 comes from Russia, whilst some three-fourths of the seed sown in Ireland also comes from Riga. Prussia has, however, so far acted as an outlet of this Russian produce, so that we have not yet felt any change. Still, for "profit and loss" reasons on the part of the Irish farmers, the amount sown for the present year in Ireland, is only 150,972 acres against 174,579 in 1853; but as the yield in 1853 was inferior, it is believed that the marketable fibre this year will be equal to the last crop. Its value is taken at about £2,000,000. The saved seed is of much greater amount than formerly; a single landed proprietor in Cork having the produce of 2,400 acres, whilst a firm in Derry holds 2,000 barrels. Fourteen steeping establishments are now in operation in Ireland, carrying out the modern patented methods of treatment. In some, a portion of the flax is steeped in open air tanks, but all of them press the flax straw between rollers after its removal from the steep, and from this reason the fibre shows a marked improvement. The importance of the rettery system, as enabling the grower to sell his flax crop without getting involved in the processes of steeping, drying, and scutching, is evinced in the fact, that large

retteries are now at work in England, Scotland, France, Belgium, Holland, Austria, Prussia, and Bavaria. The present unmechanical process of scutching seems to be now gaining some improvement, for the attention of very many inventors has been drawn to the subject. The government returns show the number of scutching mills in Ireland, in 1853, to have been 1,056, with 5,871 stocks; there having been in 1852 but 956 mills, with 5,871 stocks. The *Belgian Instructor* reports thus on the growth of hemp:—'From personal observation, I have arrived at the opinion that hemp can only be beneficially grown in Ireland in the following manner: It should be sown after potatoes, the field being thoroughly cleansed while digging that root. The hemp crop can be followed by a flax crop, as practised in Belgium. The hemp should receive some artificial manure—such as guano, or rape-cake dust—at the sowing period, to create a quick stimulus to the young plant, the manure to be applied with the seed. The seed should not be sown either broadcast or in drills, but with the usual corn-sowing machine, and covered, crossways, with the roller; or, still better, ploughed in, in the same way as wheat, along with the artificial manure, so that the crop will be in drills of three to four inches apart. As only 140 plants, at the most, per square yard are required, and each pint contains 10,570 seeds, it follows that thirty-two quarts would be a sufficient quantity of seed per statute acre; but I would recommend an increase of one fourth of that quantity for the following reasons: Experience has shown me clearly, that, although the female plant is the most vigorous at the ripening period, the male plant will take the lead until it arrives in blossom; that the male forms about a fourth of the whole crop, and possess little fibre, and that of inferior quality, reaching maturity fully four weeks before the female. By pulling the whole crop at the ripening period of the female, the male plant becomes valueless. By taking a medium—that is, two weeks after the ripening of the male, and two weeks before that of the female—the valuable seed is sacrificed, and the straw steeps unevenly, with a mixed fibre of inferior quality. To obviate these evils, a very simple plan may be adopted. By sowing the crop in drills, as described above, a fourth of the plants can be easily removed; and as the male takes the lead, by simply pulling the most advanced plants at the time the crop is six to twelve inches high, it will turn out an almost female crop, securing the greatest yield in both seed and fibre, without any after trouble in the treatment between the plants of each sex. The experiments have also convinced me of the possibility of taking off the seed by the ordinary thrashing machine, provided an even crop be obtained; and that the hemp straw can be scutched in the common flax scutching mill, by simply having the diameter of the beaters, to which the wipers are attached, enlarged, and the stock brought to an equal elevation, which can be done by excavating the ground where the stocks have to be used for hemp scutching, though attached to the same revolving shaft.' "

Sulphate of Lead as a Substitute for Oxide of Tin in Making Enamel.—Albert Ungerer, of Pforzheim, states that if sulphate of lead, which, as our readers know, is a substance produced as a secondary product in many manufactures, be added to flint glass, to the extent of about 25 per cent., a beautiful enamel glass will be obtained, which, although very heavy, becomes much more fluid on being melted than the tin enamel.—*Polytechnische Journal.*

AGRICULTURAL CAPACITIES OF TEXAS.

THE March number of *De Bow's Review* contains an account of progress in this state, which is truly remarkable:

"The following table shows the principal items of taxation, their value, etc., for each of the eight years, ending with 1853:

Years.	Land.		Negroes.			Horses and cattle.		Other property.	
	No. acres assessed.	Value.	No. ass'd.	Value.	Ad. valo.	No. assessed.	Value.	Money at interest, goods in store, &c.	Aggregate taxable property.
1846	31,967,480	$17,776,101	31,099	$10,142,198	394	411,100	$2,929,872	$3,543,501	$34,391,175
1847	30,440,210	17,326,994	39,251	12,174,593	310	448,971	3,392,784	4,663,134	37,562,505
1848	32,160,184	20,777,412	40,610	13,398,470	323	581,251	4,174,475	5,461,666	43,812,537
1849	32,890,887	20,874,641	43,534	14,658,837	337	631,649	5,419,015	5,847,516	46,241,589
1850	32,640,490	21,807,670	49,197	17,776,500	361	750,352	5,222,270	6,675,173	51,814,515
1851	37,731,774	31,415,604	59,959	26,246,668	404	901,794	6,638,115	7,639,797	69,739,581
1852	37,838,792	33,116,772	68,773	28,628,990	415	1,020,842	7,977,999	11,030,423	80,754,094
1853	39,175,858	39,259,412	78,713	35,946,473	456	1,164,463	10,217,499	13,734,530	99,155,114

This is a most extraordinary result when we look back twenty years to the meeting at Niblo's Garden, where the Hon. Daniel Webster addressed a large meeting in relation to that then unknown region. The speculation in those lands, then set on foot by Messrs. Swartwout, Curtis, and others, filled the country with Texas land scrip, all of which, we believe, was considered ultimately valueless. Nevertheless, that great country, in spite of disrepute, bankruptcy, frauds, violence, war, and repudiation, was inoculated with the American element of progress, and we find her wealth tripled in eight years, and those lands which General Hamilton, in 1840, vainly sought to pledge for a loan in France, at $3 per acre, have risen, in eight years, from $55 to $100 per acre. The cattle have increased in number 700,000, but are assessed at the low rate of $7,78 per head, having apparently not increased in assessed value; at that rate, the aggregate value has risen $7,300,000 among a population of 154,431 white.

Texas is, beyond all comparison, the best grazing country in the United States. To a stock-raiser in the north, his herd are a dead expense for at least one-half of the year. Hay and grain must be accumulated for their sustenance, and stables, more or less expensive, must be prepared for their protection during the winter months. Not so in Texas. Men whose cattle number thousands of head, are at no great expense for feeding them. The only expense attending the raising of cattle in Texas is that of salting them occasionally to prevent their becoming too wild, and herding them during the season of branding, and during the prevalence of severe "northers." Nature, all-bountiful and propitious, spreads out upon the prairies her carpet of perennial greenness, and there they roam, lowing and feeding, fat and sleek. The increase of stock is very rapid, not less than thirty per cent. yearly. A cow and a calf will sell at from $8 to $15, good oxen from $30 to $60 a pair, and a whole herd together will average $5 a head. To a man who has but small means, there can be no more certain road to wealth than that of stock-raising in Texas. Before the lapse of ten years the increase alone would amount to five hundred head annually, if he had made his purchases judiciously at the commencement. Horses, mules, sheep, and swine, are all raised with equal facility. The average expense of fatting a hog till

it weighs from two to three hundred pounds is about two bushels of corn, all the rest being effected by means of the pecans, and other food, which the country produces spontaneously.

The number of slaves given in the census for 1850 was 58,161; number assessed in that year was 49,197; since when they have increased 70 per cent., with an increase of the price per head. Since 1846, it appears, under a supply of 47,000 slaves, the assessed value has advanced from $324 to $456 per head; money at interest, it appears, has increased $10,200,000, or three hundred per cent., and it may be borne in mind there are no *banks* in Texas.

Certainly such a State as that ought to do something towards meeting, in full, the obligations that she found takers for in the days of her adversity. If there were those whose hopes for Texas outlived the news of the Alamo, they may yet outlive the days of Texan dishonor."

LINES OF RAILROAD CONNECTING BOSTON AND NEW-YORK WITH THE WEST.

Commencing at *Boston*, and following the line of the Western Railroad of Massachusetts to Albany, thence by the New-York Central Road to Buffalo, thence by the Lake Shore Railroad to Cleveland, thence by the lines of railway passing by Bellefontaine to Indianapolis, and thence to Terre Haute, we shall have an aggregate of one thousand and thirty-four miles of railroad in actual operation, crowded with business through the entire distance.

If we begin at *New-York*, and pass over the Hudson River Railroad to Albany, and thence follow the line above described, we shall find a distance of nine hundred and seventy-eight miles of completed railroads; or if from *New-York*, we follow the New-York and Erie Railroad to Dunkirk, and there intercept the above described line, we shall find a distance of nine hundred and fifty-five miles of railroads in daily operation.

If we start from *Philadelphia*, and pass by the Pennsylvania Central Railroad to Pittsburg, and thence by the Ohio and Pennsylvania Railroad to its intersection at Crestline with the line from Cleveland to Indianapolis, we shall find a line of railroad eight hundred and eighteen miles in length to Terre Haute, in actual operation.

If we start from *Baltimore*, and go by the Baltimore and Ohio Railroad to Wheeling, and thence by the Central Ohio Railroad to Columbus, thence by the line to Xenia and the Indiana Central Railroad to Indianapolis, and thence to Terre Haute, we have a line of seven hundred and seventy miles now in actual operation.

If we start from *Cincinnati*, and proceed by the railroad *via* Lawrenceburg to Indianapolis, and thence to Terre Haute, we have a line of one hundred and eighty-two miles of railroad in operation.

Combining these different lines, and omitting such portions of them as are common to two or more of the lines above named, we shall find an aggregate of *two thousand nine hundred and ninety-one miles* of railroad now completed, and in daily and constant operation between Terre Haute and the cities of the East.

Of the lines not completed, but now under construction, the Wabash Valley Railroad will unite with our line at Paris, in Edgar County, one hundred

and fifty miles from Alton, and passing to the valley of the Wabash, will proceed by Lafayette, Logansport, and Fort Wayne, to Toledo, where it will unite with the navigation of Lake Erie, and form the shortest connection between St. Louis and the Lake that is practicable. It will be about two hundred and seventy miles in length, from Paris to Toledo, and will pass through the most important section of the State of Indiana.

At Toledo, it will unite with the Cleveland and Toledo Railroad, and secure, in the direction of Cleveland and thence to the East, the connections that will entitle it to be considered one of the great thoroughfares of the business between the East and West. Nearly five millions of dollars have already been expended upon this line, and nearly one-half of the whole will be in operation by July of the present year.

It will be remembered that the junction of the Missouri and Mississippi Rivers takes place opposite the city of Alton, and, consequently, the navigation of the Missouri is favorably carried on from this point.

I subjoin a recapitulation of the distances by Railroad, above referred to, for convenience of reference.

Boston to Terre Haute, 1,034 *miles.*

	Miles.
Boston to Albany, by Western Railroad, &c.,	200
Albany to Buffalo, by New-York Central Railroad,	298
Buffalo to Cleveland, by Lake Shore Roads,	183
Cleveland to Indianapolis, by Bellefontaine Lines,	281
Indianapolis to Terre Haute,	72
Total,	1,034

New-York to Terre Haute, by New-York Central Railroad, 978 *miles.*

	Miles.
New-York to Albany, by Hudson River Railroad,	144
Albany to Indianapolis, as above,	762
Indianapolis to Terre Haute,	72
Total,	978

New-York to Terre Haute, by New-York and Erie Railroad, 955 *miles.*

	Miles.
New-York to Dunkirk,	460
Dunkirk to Cleveland,	142
Cleveland to Terre Haute,	353
Total,	955

Philadelphia to Terre Haute, 818 *miles.*

	Miles.
Philadelphia to Pittsburgh, by Pennsylvania Central Railroad,	353
Pittsburgh to Crestline, by Pennsylvania and Ohio Railroad,	187
Crestline to Indianapolis, by Bellefontaine Lines,	206
Indianapolis to Terre Haute, by Terre Haute and Richmond Railroad,	72
Total,	818

Baltimore to Terre Haute, 775 *miles.*

	Miles.
Baltimore to Wheeling, by Baltimore and Ohio Railroad,	380
Wheeling to Columbus, by Ohio Central Railroad,	141
Columbus to Indianapolis, by Indiana Central Railroad, &c.,	182
Indianapolis to Terre Haute,	72
Total,	775

Cincinnati to Terre Haute, 182 *miles.*

	Miles.
Cincinnati and Indianapolis Railroad,	110
Indianapolis to Terra Haute,	72
Total,	182

The above are the lines of railway completed and in operation, and include, of distinct lines, 2,991 miles.

LINES UNDER CONSTRUCTION.

	Miles.
Wabash Valley Railroad, Paris to Toledo,	270
Cleveland and Toledo Railroad, *via* Sandusky, completed,	107
Cleveland and Toledo Railroad, *via* Norwalk, completed,	112
Illinois Central Railroad, main line, completed,	454
Illinois Central Railroad, Chicago Branch,	173
Connecting lines in progress,	1,116

Which, added to the aggregate above, make a total of *four thousand, one hundred and seven miles* of railroads, connecting St. Louis with the Atlantic cities.

RAILWAYS IN RUSSIA.

THE carriage allotted for my special use was about ten feet square; it was furnished with two sofas and chairs, a small card table, and two side tables. On the sofas I could have reclined at full length—a convenience very desirable, and generally denied us on English railways—both sofas and chairs had air cushions, and were very comfortable. I looked into several first and second class carriages, and they all appeared nicely fitted up, although not like the one assigned to me; the second class carriages had cushions superior to those of the first class on English railways, and afforded plenty of room to each individual, allowing of his sitting without cramping his knees upon those of the person opposite to him. We left Moscow at 11 o'clock precisely—Mr. Sherman, my servant, and myself, occupying this litte room to ourselves; our baggage was stowed away in another carriage. I was pleased to perceive that there was no unnecessary hurry in the railway movements such as those which annoy the English traveler; plenty of time was allowed at every station to the passengers to take their meals, and in each there was all that could be required in the way of refreshments. The time allowed for the train to pass from one station to another is carefully fixed for the driver, who dare not arrive a minute sooner or later; so that, in some cases, we had to go very slowly, in order not to arrive before the time. This, however, is not unpleasant, as people on the continent do not give away to that nervous hurry which fidgets us and shortens our lives. Who in England has time to look around him? Rich and poor seem to be urged along by an impetus which prevents their thinking of anything except their next appointment, and as soon as that is kept, their thoughts fly to the next.—*English Prisoners in Russia.*

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

CHEMICAL EFFECTS OF CERTAIN FERTILIZERS ON THE POTATO.

BY PROF. J. L. CAMPBELL, OF WASHINGTON COLLEGE, VIRGINIA.

In the spring of 1852, I applied to a part of a small lot of potatoes a mixture of wood ashes, gypsum, and common salt, using them in the proportion of four bushels of recently leached ashes, one bushel of ground gypsum, and half a gallon of salt. The application was made soon after the tops began to make their appearance above the surface of the ground. The mixture was applied to a part only of the lot, while, in other respects, the whole was treated alike. That part to which the application was made, produced not only a more abundant crop than the other, but, also, potatoes of much superior quality.

This led me to try a similar treatment of the greater portion of my little crop in 1853. The fertilizing preparation was in this case varied, by using double the quantity of salt previously used. By way of further experiment, too, the mode of applying it was somewhat varied. To one part it was applied at the time of planting directly upon the tubers; to another part, after the tops appeared above ground. The result this year was more satisfactory, in the soundness, quantity, and flavor of the potatoes, than it had been the year before, although the season was far from being favorable. There was, however, no perceptible difference between those having the fertilizers applied at the time of planting, and those having them subsequently applied upon the surface of the ground.

Such was the influence of the ashes, plaster, and salt, that I resolved to subject to chemical examination specimens cultivated both with and without the use of these manures. This has been done in such a way as to give a fair comparison of results.

Two small plots of ground, alike in character and fertility, were prepared last spring (1854) for potatoes. The soil was broken up early, and exposed to the action of frost. At planting time—the latter part of April—it was stirred, and laid off in trenches four inches deep, and two-and-a-*half* feet apart. In the bottom of these the tubers were drilled, at the distance of six or eight inches apart. The trenches were then filled up with a mixture of broken straw and stable manure. Up to this point both portions of ground were treated precisely alike.

The mixture of ashes, gypsum, and salt, was now scattered along the trenches on the manure in one of the plots of ground, while it was entirely withheld from the other. The quantity applied was at the rate of about twelve bushels to the acre. The whole was then covered with the soil. The subsequent culture consisted in keeping the ground clear of weeds, and in drawing a little earth to the tops in the early part of their growth—the same mode of treatment being applied to both divisions. The resulting crop was about as four to one in favor of that portion to which the mineral fertilizers were applied.

It is deemed unnecessary to give further details as to mode of culture, results in quantity, etc., as the object in view was a chemical investigation. The conclusions reached by this investigation will, doubtless, possess some interest in the mind of the intelligent agriculturist, and will, I hope, lead directly to more extended and more accurate practical experiments.

Specimens of the tubers from both portions of ground have been examined:

1. *With respect to the relative quantities of solid, nutritious matter found in each; and,* 2. *With respect to the influence of the mineral fertilizer upon the relative proportions of some of the elements in the ashes.*

For the sake of brevity, let the specimen cultivated with the ashes, plaster, and salt, be designated by the letter A, and that cultivated with the organic manures alone by B.—The kind of potato planted is that known here as the *Long Red.*

The specimen, A, carefully cleaned, cut into thin slices, and dried at 212,° (F) lost 77.5 per centum of its weight, while B, treated in the same way, lost 82.2 per centum. Thus A was found to contain nearly 5 per cent. more of solid, nutritious matter; that is, of starch, gum, etc., which give the potato its value as an article of food.

The solid part of A, when thoroughly dried and burned, gave 4.15 per cent of ashes, while B, under like circumstances, gave 4 per cent.

When subjected to analysis, the ashes of the specimens, A and B, were found to vary considerably in the proportions of some of their elements. They were examined especially with respect to the relative quantities of *potassa, soda, sulphuric acid,* and chlorine, contained in each. It will be remembered that *wood ashes* afford, even after ordinary lixiviation, considerable quantities of *potassa,* together with several other valuable fertilizing substances, such as *lime, phosphoric acid,* etc. *Gypsum* is composed of *lime* and *sulphuric acid,* both of which are found in the ashes of the potato. *Common salt* (chloride of sodium) is an abundant source of *chlorine* and *sodium,* the metallic base of *soda.*

Without pretending to give any part of the process of analysis, I will simply sum up the results in a condensed form. The following table will give a comparative view of both specimens, together with similar results as given in Norton's Scientific Agriculture. The columns marked A and B give the results of an analysis of the two specimens under consideration. The third column gives the proportions of the same elements from Norton.

100 grains of Ashes gave	A.	B.	*Norton.*
Potassa, - - -	50.91	49.75	51.50
Soda, - - -	3.49	65	a trace
Sulphuric Acid, - -	9.60	6.27	7.10
Chlorine, - -	3.30	1.98	2.70
	67.30	58.65	61.30

From the relative qualities of nutritive matter found in the two specimens differently cultivated, we may infer, that the presence of the *inorganic* fertilizers rendered the growth of the *organic* part of the tubers more perfect, and thus improved both the quantity and quality of the crop.

We may also infer from the above table, that the inorganic part, or ashes of the potato, may be considerably modified in composition by an abundant supply of certain elements of fertility, not generally existing (except in limited quantities) in soils that have been long under cultivation.

It will be seen by reference to the table, that potassa constitutes about one-half of the weight of potato ashes; hence the value of wood-ashes as a manure for this crop. While soda does not seem to be essential to the mature growth of the tubers, it is taken up by them when present in the soil. I presume it is taken up chiefly as chloride of sodium; and, in this

form, doubtless, it does much to promote the healthful and vigorous growth of the plant.

Chlorine is always present in the potato, and, hence, may be regarded as one of the elements in the soil designed by the Creator to aid in giving it full maturity.

The *sulphuric acid* of plants is, doubtless, generally combined with some one or more bases forming salts; probably sulphates of lime and potassa may exist together in the same plant. The presence of gypsum, *in excess*, not only furnishes an abundance of sulphuric acid and lime, but serves, also, to "fix the ammonia" of the organic manure used, of the soil, or of the atmosphere. This may be regarded as a secondary function of gypsum.

Wood-ashes, too, may be regarded as doing more than simply providing a supply of potash. They contain a very appreciable quantity of soluble silica. This gives strength and a healthful growth to the stalks, and, hence, tends to prevent some diseases, having their origin near the surface of the ground, and often extending downward to the tubers. Ashes also furnish small portions of phosphates; but, as phosphoric acid is found in no inconsiderable quantity in the ashes of the potato, I would recommend the addition of bones, in some form, to the other fertilizers used, especially on soils that have been frequently planted with indian corn and wheat. *Burnt* bones are readily reduced to powder by beating or grinding; though they are more valuable, and their action more efficient, if dissolved in sulphuric acid.

The advantages of applying soluble fertilizers, in such a way that they will be gradually carried to the roots of the growing plant by the rain, are too obvious to require even a passing remark.

HORSE-SHOEING.

If to write anything worth reading, requires that one should be practically acquainted with the subject, and understand what the conditions of the case demand, then, what we write under this title may be passed over as worthless. We do not know what is the proper treatment of the case under our notice; and, what is still worse, is, we do not know of any who are much above us in this respect. Nevertheless, what we do know, we are inclined to state.

We know that horse-shoeing is a very important service, on which not only the value of the horse is often dependent, but even the life of his rider. We know, also, that skill in all the arts does not come by nature; that apprenticeship in all its essentials is absolutely indispensable in them. We also know that our town and village blacksmiths, to a very considerable extent, are practitioners in this department, without any especial training for it. They learned what they know of some *boss*, who was very popular in his own community, perhaps, for his general proficiency in the art which he practiced, but who acquired his theories, if nothing more, from some master, who, perhaps, commenced this work when he was ignorant of it as his apprentice; because he failed in some other employment, and had a *natural tact* for it; and so the list goes on—"an unbroken succession"—from one who never spent an hour in the proper investigation of the subject. Hence, we are not surprised to read that "American horses fail in the feet oftener than those of other countries."

In some of our cities, our pavements are disgraceful in the eyes o sible horses. Broadway might very accurately be defined, "a street arranged so as to require of all horses the greatest possible effort to preserve their standing." We seldom walk to our place of business, less than a mile and a half, without seeing one or more instances of slipping; and often, when a complete fall is avoided, we notice many horses whose cramped motions resemble those of a smoothly-shod boy, who is taking his first lessons in walking on ice.

But as we pretend to no especial skill here, we give place to a writer in the *N. Y. Courier*, who seems to understand at least something on this subject, and "has had an experience of twenty years in the British cavalry," though in what capacity we are not informed, and whose suggestions may be useful to those who have some personal responsibility in reference to this subject. He writes as follows:

"Of winter or summer states of roadways, and the slipping, stumbling, and falling of horses, the writer cannot here more than observe that it is these which dictate how the hoofs should be prepared and the shoes adapted. The business of the farrier, as well of the hostler, should all be managed in direct reference to them. An animal requires, in all states of the streets and roads, foot-freedom and foothold; and, in slippery states, extra care must be taken that a good foothold is secured. All shoes and shoeing, however—and this fundamental rule should never be lost sight of—must be subject to the natural and elastic conditions of the foot, so as not in any manner to impede or injure these. In states of nature, and when galloping at liberty over all kinds of ground, soft and hard, rough and smooth, the horse has three sources of good and sufficient foothold. The first is the concave form of the under surface of the hoof; the second is the expansibility of the hoof, which opens at the heels and quarters, and spreads at the base, under the super-weight and momentum of motion; and the third is the consequent and very effective stay derived from the action of the wedge-like frog on the surface or ground.

Let any mechanic examine the structure of the horse's foot, and he would at once discover and pronounce it to be an organ whose construction and processes were admirable, and well adapted it to be at once an expansive as well as a protective covering for the motive and sensitive joints and tissues contained within. He would further see and add that, if in circumstances of an altered or domesticated state, an additional or artificial protection against tear or wear should be required, that this—whether of iron or aught else—must be so applied and adjusted as not to interfere with, or limit, the expansive properties of the hoof, on the penalty of fatal mischief.

Let us now inquire into facts. How are the shoes of horses—this additional protection—applied? Are their form and adjustments well and rightly suited to their end and purpose? No; for, first, the hoofs grow deep, dry, hard, and inelastic; second, the shoes promote this state, and further bind and debar expansion; third, instead of being concave to the ground, so as to correspond to the concave form of the under surface of the hoof, the form of the shoes are the reverse, and may be, therefore, likened to a skate, nailed on in a manner to fix the parts; fourth, the frog is squeezed and diminished, and is altogether disabled from usefully exercising its truly valuable functions.

In order to remedy one part of the evil,—slipping and falling—arising from such shoes and shoeing, recourse is had to toe-pieces and caulkings. These aggravate the general mischief; for already ill-adjusted bearings of the hoofs and shoes are straining the joints and ligaments, and this effect of high caulking greatly tends to increase, as will be visible, if we observe the

manner in which one caulking first takes the ground, and then how the animal's weight twists toward one on the other. Concussions and injuries to the foot, pasterns, and fetlocks, and wrenches of the hocks, are continual results. One kind of evil, substituted as the remedy for another, does not abate the first. It is only a superadded evil. From all these causes flow the almost universal prevalence of contracted, impaired, and unsound conditions of the feet of horses; the fore-feet in particular, which are more under the centre of weight and motion.

Toe-pieces should never be used. Properly formed shoes never require them. As a general rule, caulkings on the fore-shoes should seldom be resorted to. When icy states of the streets or roads seem to exact them, a low caulk on the outer heel of each shoe, only, should be used, and the web of the inner heel should be drawn narrow and thick, in proportion to the height of the caulk, so as to give an even and true bearing under the centre of the animal's weight. The same rule should apply to the under heel of the hind-shoes; but a low caulk on the outer heel of each shoe, behind, is always recommendable. The main and true defence, however, against toeing, tripping, and stumbling, is ever to be sought in shoes and shoeing, mechanically and physiologically adapted to preserve natural and healthy forms and conditions of the hoofs and feet."

THE POTATO CULTURE.

Various expedients have been tried, with more or less success, to prevent the potato-rot, but we have not been forward in devising or commending plans for selecting special soils, or using certain precautions, from the fact, that we have had but little confidence in their success. Sometimes judicious management has lessened the rate or extent of decay; but when a crop is once infected, or in that condition which is so called, alleviation is the only thing, in our judgment, that can be done. It is like one far gone in consumption. The philosophy which brought us to this result, be it true or false, is as follows:

The tuber is not the organ on which vegetation seems to rely, as her main dependence, in sustaining her succession of growths, but is only a duplicate process, which is capable, to a *limited extent*, of increasing the production of the species. At the same time, in its native condition, the plant never forgets its seeds. These are always the true reliance, and, we believe, the only true reliance for the propagation of plants.

Analogy is also with us in this doctrine. How do we secure a permanent succession of tuberose plants for our flower-gardens? We always rely on the product of seeds. We pot and repot tubers, but we always expect them to deteriorate, and have occasion nearly, or quite every year, to resort to new importations, or to the product of our own sowing. These importations, if honestly conducted, are the products of the seed, and not of the division of the tubers. We do not know why a greater permanency should be expected of the tubers of a potato than of a hyacinth. We have carefully watched this matter, not desiring to express an opinion too hastily, though we give it now as an opinion only, while it seems to us based on sound principles in philosophy.

If we are right, the true method for every farmer to adopt is to prepare his grounds in the best possible manner, plant the best potatoes he can procure, and give them his best attention, while he secures a good growth, and ripens the seeds in the best manner, planting them in a soil equally well prepared for them, and waits for his crop of seedlings. This should be done, to some extent, every year.

INDIAN CORN—ZEA MAYS.

We regard this crop not only as the most valuable raised in this country, on account of its immense amount, but as the most important to the producer. It grows in various temperatures, varying from "40° south latitude to 45° north latitude," and will flourish even at the elevation of several thousand feet above the sea. New species are occasionally introduced, which bear greater degrees of cold than those hitherto cultivated. This, probably, is dependent, at least to a great extent, upon its becoming acclimated, or to adapting itself to the climate in which it is raised.

The entire product of corn in the United States, by the census of 1850, as quoted on p. 326, of this volume, was 592,078,804 bushels. De Bow estimates this as amounting, in value, to $296,035,552, as seen on p. 327.

The chemical composition of corn varies with different species and different latitudes. Sweet corn contains more of the phosphates. Southern and "Oregon" corn contains more starch than Northern; Rice and Pop corn have it in the least proportion. Rice corn contains the greatest quantity of oil. Pop corn contains its oil in small cells, and, by heat, this oil is decomposed, and assumes a gaseous form, by which process the cells are burst, and the result, when produced suddenly, turns the grain completely inside'out.

The Tuscarora corn is deficient in oil, and, hence, is not so useful in fattening animals, though it may make excellent bread. All corn contains gluten in so limited a quantity, that it does not "rise" like the flour of wheat, on the application of yeast. Yellow corn has $\frac{1}{10}$ less bran than white corn; it is heavier, also.

MODE OF CULTURE.

Good crops of corn can be grown in almost every kind of soil, by proper cultivation. But, judging from the rich crops produced in some parts of Ohio, that best suited to the growth of corn is an alluvial deposit, rich in vegetable matter, not stinted in its amount of moisture. It should be deep and mellow, allowing the roots to extend themselves freely in all directions.

Corn will not vegetate at a low temperature, and, hence, the condition of the season can not be overlooked by the judicious farmer. Some seeds will remain uninjured, if they do not actually vegetate, in a cold soil. Corn requires a temperature of at least 50° or 55°. If reduced below this, there is a tendency to decay.

The ground being well ploughed and pulverized, the hills should be prepared at a distance of three or three and a half feet apart. The manure may be broadcast, or placed on the hills. An excellent manure for the hill is made by mixing one-fifth of hen manure, one-fifth of plaster, and three-fifths of ashes, of which, after it is well mingled, and has been left to ferment, a spoonful may be thrown into each hill. If manure is used broadcast, a

spoonful of gypsum in each hill, in most soils, is found very profitable. If barn-yard manure is not at hand, the artificial preparations to which we have so often referred, should be put in requisition. Decayed vegetable matter is most desirable, and, after this, the various bone mixtures. Soaking the seed before planting hastens its germination. Covering the seed with tar, and then, for convenience in planting, rolling it in ashes or lime, will preserve it from the attacks of crows or insects.

When the corn appears above ground, an occasional sprinkling of ashes is useful, which may be applied at the hoeing.

Hilling corn is not recommended. All such elevations are unfavorable to the influence of rains. Use a hoe, or a cultivator, or both, keeping down all weeds, and making the soil soft and porous.

CORN FOR FODDER.

Corn is often planted for use as feed; and we doubt not that farmers would find it for their interest to make a more free use of this excellent feed. Few products of the farm are more nutritious or more convenient. A single acre will ordinarily produce five or six tons, and will keep four cows for three months. But a much greater result has been sometimes obtained. In 1845, in Massachusetts, over thirty-one tons of green stalks were grown upon an acre. The product of two acres and thirty-two rods was estimated as equivalent to fifteen tons of the best of hay. On this lot, ten bushels of corn were sown. When it is to be used in this way, it should be sown in drills, two and a half or three feet apart, sowing from three to four bushels to the acre. After sowing, the ground should be harrowed. The Stowell & West corn should be used. Good feed may thus be obtained by the end of June. The stalks should be suffered to wilt before feeding. If they are to be dried, or kept for winter, they should be cut in the tassel, and a little sprinkling of salt is recommended. This tends to prevent them from moulding, and is also agreeable to the cattle.

The stalks may be prepared by various processes. Sometimes they are cut before the corn is ripe. This is for the benefit of the feed, and it saves the cost of the corn. Sometimes they are left till after the corn is gathered, when they are cut up from the roots. Which is best, on the whole, is yet a question. We are disposed to think that, by the use of some well-arranged cutters, the entire stalk may be consumed for feed. Every part of it is highly nutritious, and we see not why the whole may not be so prepared, as to be eagerly eaten by different kinds of stock.

FOOT-ROT.—The *Country Gentleman* states that the following remedy for the foot-rot in sheep has been used with great success by H. Howland, of Aurora, Cayuga county, N. Y., for the last thirty years:

"Mix flour of sulphur with the salt given to the sheep, in a proportion just sufficient to discolor perceptibly the salt, or about one-eighth part. Sulphur may be had at a wholesale price at a cost of not over two cents. Where local applications are necessary, we should much prefer a solution of chloride of lime to any other application."

UNITED STATES AGRICULTURAL SOCIETY.

The third annual session of this society commenced February 21st, 1855, in the "East Room" of the Smithsonian Institution. Twenty-six States were represented by accredited delegates from state and county societies, and there was also a large number of individual members of the society.

The Hon. M. P. Wilder, of Mass., President of the Society, on taking the chair, delivered a pertinent address, in which he recapitulated the operations of the society during the past year, including the cattle show at Springfield, Ohio. The address was received with applause, and has been printed for distribution in pamphlet form.

On motion of Mr. King, of New-York, a committee of one from each state represented was chosen by the President, to nominate a board of officers for the ensuing year.

A letter was read from Col. Selden, resigning his office as treasurer, and, accompanied by securities for the funds of the society deposited in the bank, was referred to Messrs. Wager, of New-York, Calvert of Maryland, and Worthington, of Ohio. They subsequently reported, complimenting Col. Selden for his integrity, and expressing confidence that the funds are secure.

Resolutions were offered by Messrs. Holcomb, of Delaware, and Kemmel, of Maryland, which were sustained by Messrs. Calvert, Peck, and Kennedy, of Maryland, King, of New-York, and Jones, of Delaware, and then laid on the table for future discussion.

Messrs. Wager, of New-York, Kennedy, of Pennsylvania, Proctor, of Massachusetts, Steadman, of Ohio, and Jones, of Delaware, were appointed a committee to receive and report on amendments to the constitution.

Mr. Calvert, of Maryland, offered a resolution recommending political action on the part of agriculturists, and supported it by able remarks.

He was followed by Messrs. French, of New-Hampshire, Dyer, of Conn., and Kennedy of Pennsylvania, and the resolution was laid on the table for future discussion.

Mr. Jones, of Delaware, presented a memorial, showing the effect of legislation upon agriculture, and embracing a mass of historical facts.

After having been read, it was, on motion of Mr. King, of New-York, placed on the files of the society.

Mr. Clenson, of Maryland, introduced a resolution recommending agricultural education.

An informal discussion of the potato rot, deep ploughing, and other matters of great agricultural interest, followed, in which a large number of gentlemen participated. Many facts of importance were elicited, as gentlemen from various sections related their "experience," and the debate was continued until four o'clock.

In the evening, the Society were favored by a lecture from their Vice-President from Virginia, the venerable George Washington Parke Custis. His eloquent narrative of the illustrious "Farmer of Mount Vernon" was listened to with marked attention, by a large audience, and was warmly applauded.

After the lecture, a large number of ladies and gentlemen were introduced by the President to the orator.

After the lecture, the officers and committees were unexpectedly entertained at the National Hotel, by Col. C. B. Calvert, the proprietor of "Riversdale." A sumptuous repast graced the festive board, and the festivities were prolonged until a late hour.

SECOND DAY.

This morning the Society met at ten o'clock, and, after the report of Mr. King, of New-York, chairman of the nominating committee, elected the following

OFFICERS FOR 1855.

PRESIDENT.

MARSHALL P. WILDER, of Massachusetts.

VICE-PRESIDENTS.

John D. Lang, Maine,
H. F. French, N. H.,
Fred. Holbrook, Vt.,
B. V. French, Mass.,
Jos. J. Cooke, Rhode Island,
John T. Andrew, Conn.,
Henry Wager, New-York,
Isaac Cornell, New-Jersey,
Isaac Newton, Pa.,
C. H. Holcomb, Delaware,
H. G. S. Key, Md.,
G. W. P. Custis, Va.,
Henry K. Burgwyn, N. C.,
James Hopkinson, S. C.,
D. A. Reese, Ga.,
A. P. Hatch, Ala.,
A. G. Brown, Miss.,
J. D. B. DeBow, La.,
Gen. Whitfield, Kansas,
J. T. Worthington, Ohio,
B. Gratz, Ky.,
M. P. Gentry, Tenn.,
Jos. Orr, Ind.,
J. A. Kinnicutt, Ill.,
Thos. Allen, Mo.,
T. B. Flournoy, Ark.,
J. C. Holmes, Mich.,
Jackson Morton, Fla.,
T. G. Rusk, Texas,
J. W. Grimes, Iowa,
B. C. Eastham, Wis.,
J. M. Horner, Cal.,
Jos. H. Bradley, D. C,
S. M. Baird, New-Mexico,
H. H. Sibley, Minn.,
Joseph Lane, Oregon,
J. L. Hayes, Utah,
Mr. Gliddings, Nebraska.

EXECUTIVE COMMITTE.

John A. King, New-York,
C. B. Calvert, Md.,
A. L. Elwyn, Penn.,
J. Wentworth, Ill.,
B. Perley Poore, Mass.,
A. Watts, Ohio,
John Jones, Del.

SECRETARY.

WILLIAM S. KING, Boston, Massachusetts.

TREASURER.

B. B. FRENCH, Washington, D. C.

On a report of the Executive Committee, Dr. Elwin, of Pennsylvania, Henry Wager, of New-York, Dr. W. T. G. Morton, of Massachusetts, Col. Anthony Kimmel, of Md., and Chas. L. Flint, of Massachusetts, were appointed delegates to attend the coming Industrial Exhibition at Paris.

After the election, the discussion upon the resolution offered by Mr. C. P. Holcomb, of Delaware, on the "Reciprocity Treaty" as injurious to the agricultural interests of the Republic, took place. Messrs. Holcomb, Peck, King, and Jones participated in the discussion.

This evening the Hon G. P. Marsh lectured on "Notices of the Rural Economy of Continental Europe."

THIRD DAY.

After the election yesterday, the Society discussed a resolution offered the day previous by Mr. C. B. Holcomb, of Delaware, denouncing the "Reciprocity Treaty" as injurious to the agricultural interests of the public, Messrs. Holcomb, Peck, King, Waters, Elwyn, Kennedy, Steadman, Cowley, and

other gentlemen participating. The resolution, as finally amended and passed, reads:

Resolved, That we object to the doctrine of free trade for agriculture and protection for other interests.

Col. Calvert, of Maryland, offered the following preamble and resolutions, which he supported in an able and earnest manner, deprecating all applications to Congress, and urging action on the part of agriculturists, as calculated to *command* success.

The resolutions, after having been discussed by Messrs. Kennedy, of Penn., Jones, of Delaware, and King, of New-York, were carried:

Whereas, The prosperity of a country is in proportion to the improvement of its agriculture, therefore,

Resolved, That agriculture should be the first interest considered in legislating for the general welfare, and that such legislation should be had as will foster and protect this interest, which is paramount to all others.

Resolved, That the time has arrived for the agriculturists of the whole country to meet in convention, and determine for themselves what legislation is necessary for their protection.

Resolved, That such a convention, to be composed of delegates from each State of the Union, be earnestly recommended by this society, in order that an agricultural platform may be established, which will meet the views of, and be sustained by the whole body of agriculturists as a profession.

Mr. Wagner, of New-York, submitted a report on the proposed amendments to the constitution, which was discussed by Messrs. Fay and Waters, of Massachusetts, Cooke, of Rhode Island, King, of New-York, Hamilton, of New-Jersey, Calvert, of Maryland, and Worthington, of Ohio.

The constitution was so amended as to have the payment of ten dollars constitute life-membership, and to change the time for holding the annual meeting to the second Wednesday of January.

Various reports were read; among them, one on the *Chess in Wheat*, from the Smithsonian Institute; on *Agricultural History*, by B. P. Poore; on *Mr. Glover's Collection*, by Mr. Peck; and on *Western Fruits*, by Dr. Warden.

Mr. Peck, of Maryland, reported that the committee appointed to urge upon Congress the purchase of Mr. Glover's collection of modelled fruits, had had an interview with the proper committee of Congress, and received assurances that the matter would receive their attention.

A communication from Professor Henry was read, detailing experiments on the culture of the "Oregon pea," made under the direction of the Smithsonian Institution, at the request of the society. The results at Savannah proved it worthless for that region.

A paper on "Alderney Cattle," by Dr. W. J. G. Morton, was read and referred. Also, a paper on the "Potato Oat," from New-York.

Dr. Warden, of Cincinnati, exhibited over thirty different varieties of Western apples, which he descanted upon with his wonted accuracy.

The invitation was received and accepted inviting the Society to visit the Metropolitan Mechanics' Institute to-day at eleven o'clock. Invitations to the office of the Coast Survey and the agriculture room at the Patent Office, were also accepted.

After some remarks by Mr. Custis, giving his experience in growing wheat in Virginia, the Society adjourned until seven o'clock, when the Hon. G. P.

Marsh had been invited to address them on the *Rural Economy of Continental Europe.*

The lecture was listened to with great interest, embodying, as it did, a great amount of original information, and its publication will constitute a valuable addition to agricultural literature.

Dr. Warden followed, with an eloquent lecture on hedges, replete with practical information.

FRIDAY MORNING, MARCH 2.

The Society met at ten o'clock, and passed an hour in familiar conversation on agricultural subjects.

After a discussion on the appointment of Commissioners to the Industrial Exhibition at Paris, the matter was referred to the Executive Committee.

On motion of Mr. Poore, of Massachusetts, it was unanimously.

Resolved, That the thanks of the United States Agricultural Society be presented to the Regents of the Smithsonian Institution, for the facilities afforded in holding this session. The utility of this Institution, in thus serving as a nucleus, around which all useful associations can rally, at the capital of our Republic, shows the wisdom of the course pursued by the present Regents.

Col. Kimmel, of Maryland, read a curious extract from the Maryland Gazette, of September 8th, 1784, showing that "cattle shows" were established at Baltimore in that year.

On motion of Mr. Waters, of Massachusetts, it was unanimously

Resolved, That the thanks of this Society be proffered to Hon. George P. Marsh, for the very beautifully written and exceedingly interesting lecture he was so good as to present to us last evening, and that Professor Henry be requested to wait on him and request a copy for publication.

On motion of Mr. Calvert of Maryland, it was unanimously

Resolved, That the thanks of this Society be presented to Dr. Warden, for his interesting lecture on the cultivation of hedges, and that he be requested to present a copy of the same for publication in the transactions of the Society.

At eleven o'clock, in accordance with their acceptance of the invitation, the Society adjourned to visit the exhibition of the "Metropolitan Mechanics' Institute."

After visiting the Exhibition yesterday, the Society returned to the "East Room," and, on motion of Mr. King, of New York, it was

Resolved, That the thanks of the Society be presented to the officers of the Metropolitan Mechanics' Institute, for their polite invitation to attend their exhibition, which they have visited and examined with great pleasure.

After some debate, in which a strong desire for concerted action on the part of American Agriculturists was manifested, it was, on motion of Col. Calvert, of Maryland,

Resolved, That the first Friday after the next annual meeting of this Society, be fixed for the assembling of the Agricultural Convention, and that the press be requested to urge the importance of the subject.

Resolutions were passed complimenting the agricultural press, and urging its conductors to consider political economy, and urge united action on such matters connected with it as their judgment may suggest.

On motion of Mr. Taylor, it was

Resolved, That the thanks of the National Agricultural Society be tendered to the Hon. Mr. Morton, of the United States Senate, for his able report upon the subject of an Agricultural Department.

Resolutions were passed complimentary to President Wilder; to the Regents of the Smithsonian Institution; to Lieutenant Maury, (for an invitation to visit the Observatory;) to Mr. King, the Secretary of the Society; and to Mr. Poore, of the executive committee.

Adjourning, after three days' session, in which agriculturists from twenty-six States participated with great harmony of feeling, the members of the Society felt encouraged by this renewed and increased manifestation of the *great interest* of the Republic to assert its position.

In the evening many of the officers and members called upon Mr. Clayton, to thank him for his speech of the previous evening.

THE SPIDER.

Why hate and shudder at spiders? Because they entangle flies and kill them? That should entitle them to our gratitude, for flies, being troublesome and injurious to man, any other insect that destroys them ought to be considered our ally, and taken into friendship. Are they not beautiful? The other day we observed one in the field. He was larger than a double-eagle and as bright and yellow, having colors more striking, indeed, because harmoniously variegated.

Few ladies could outvie him in personal ornaments, which, in his case, were not of recent purchase, but came to him by inheritance in the line of an ancient family. He had constructed one of his wonderful palaces of regular dimensions and great size; but, either seeing, as the New-York architects sometimes fail to do, that its foundations were insecure, or else disliking the neighborhood, as nice people do rum-holes, blacksmith's and currier's shops, French boarding-houses and American piggeries—for these, or some other good reasons, he made up his mind to remove his residence.

Now, as he had been at immense expense in building his capacious house, like the Crystal Palace proprietors of New-York, and out of his own bowels too, which they did not—for speculators and brokers are not supposed to have any, purses being a complete substitute—having been at so much cost, he did not like to go away and leave his domicil behind him. For his stock of materials for such structures is limited, as well as the funds of the operators in the Fancies. Nature, it is said, only supplies the spider family with a certain quantity at first, which, if they are extravagant in spending, they will have afterwards to make up by *knitting*, Schuylerizing or stealing—the difference between which methods, we can not tarry to record, and might not be able to do so, was ever so much time allowed us. In short, our spider resolved, as the palace proprietors, who may have taken the hint from him, are said to have determined on—he resolved on taking his splendid dwelling down.

So one morning he began in earnest to pull down, and, as far as we could judge, at the point where he had ended in putting it up; that is, the last timbers he had placed in the building were the first to be removed. Patiently and carefully he worked, taking off filament by filament of those long beams and braces, which seemed single to the naked eye, but yet were dou-

bled and trebled and quadrupled to afford sufficient strength for so large a work. For this creature, it must be observed, has discovered no iron or other new material to weave into his productions, but is obliged to labor with just the same raw material as when he spun his web upon the grape vines of Mrs. Eve. So if he wants augmented strength in any portion of his work, he can only attain it by putting several timbers together.

By degrees, we could see, as he wrought, the main pillars and string-pieces lessening in size, and at length disappearing one by one, till finally, the whole habitation was invisible. What had become of it? We kept a sharp look-out at this juncture, for it was evidently the crisis of the enterprise. At last we saw the spider hoist a pack upon his back in the shape of a ball, and commence his journey. It was his house, which he was thus transporting to erect in a more favorable locality. Like a snail, he was thus carrying it upon his back, though, unlike that animal, he had the rough stock of another in his belly, should this tenement of his be dissolved by the hurricane, flood, or fire. The beautiful, industrious and provident creature ran along as nimble as Æneas, with his father, Anchises, on his shoulders, though under the burden of all his worldly goods. He made for a large tree, where, notwithstanding all our vigilance, he forever disappeared. We sent after him a sincere wish, that he might obtain an eligible lot *up-town*, whither he was going, on easy terms.—*Newark Advertiser.*

THE BAREFOOTED PRINTER-BOY.

The Pittsburgh *Morning Ariel*, under this caption, gives a short story of a distinguished citizen of Pennsylvania, as follows:

Some thirty years ago, a barefooted boy floated down the Susquehannah river on an humble raft, and arrived at Harrisburg, Pa. He came from the North, and belonged to a large family, with all his worldly goods tied up in a little pocket-handkerchief. He sought and obtained employment in a printing office as an apprentice. From an apprentice to a journeyman, from a journeyman to a reporter, then to an editor, the barefooted printer boy worked his way against obstacles which the struggling poor only know. The persevering follower in Franklin's steps began to realize the fruits of his patient toil and privation. The young aspirant became Printer to the State, and by frugal management was soon enabled to accomplish the object dearest to his heart—the establishment of his mother in a home above want—in the possession of every comfort she could desire.

His brothers were next his care, and like Napoleon, he had a strong arm with which to aid them—an indomitable perseverance that nothing could long sucessfully obstruct. In a few years, they too, with his sisters, were independent of the world; the once barefooted printer boy was in possession of affluence, surrounded by a young and affectionate family. He did not stop here. He was the friend of the friendless, the patron of merit, and the encourager of industry. He rose in honor and in office, until the poor barefooted boy, who entered a printing office in Harrisburgh, hungry and weary, laid down his little bundle on a pile of wet paper and asked to become a printer's apprentice, was elected Senator in Congress! That man is Simon Cameron, of Pennsylvania.

SHEEP AND WOOL.

The annexed table, showing the number of sheep and pounds of wool produced in each of the States and Territories of the Union, according to the Census of 1850, has been published in many of the papers. We have added, in another column, at the right hand, the average yield of a sheep in pounds and hundreths:

States.	Sheep.	Lbs. Wool.	Av.
Maine,	440,953	1,362,986	3,09
New-Hampshire,	384,656	1,108,476	2,88
Vermont,	919,992	3,410,993	3,70
Massachusetts,	188,651	585,136	3,10
Rhode Island,	44,296	129,692	2,92
Connecticut,	174,181	497,454	2,85
New-York,	3,454,241	10,070,301	2,91
New-Jersey,	160,488	375,386	2,33
Pennsylvania,	1,822,356	4,481,570	2,45
Delaware,	27,503	57,768	2,10
Maryland,	177,902	480,226	2,69
Dist. of Columbia,	150	525	2,28
Virginia,	1,311,004	2,360,765	1,63
North Carolina,	595,249	970,738	1,76
South Carolina,	281,754	487,223	1,76
Georgia,	560,435	990,019	0,99
Florida,	23,311	23,247	1,76
Alabama,	371,800	659,118	1,83
Mississippi,	304,929	559,619	0,99
Louisiana,	110,333	109,897	1,45
Texas,	90,098	131,373	2,00
Arkansas,	91,256	182,595	1,68
Tennessee,	811,537	1,363,378	1,68
Kentucky,	1,070,303	2,283,685	2,13
Ohio,	3,937,086	10,111,288	2,56
Michigan,	746,435	2,043,283	2,73
Indiana,	1,122,484	2,610,287	2,32
Illinois,	894,043	2,150,113	2,53
Missouri,	756,309	1,615,860	2,28
Iowa,	149,960	373,898	2,49
Wisconsin,	124,893	253,963	1,02
California,	17,574	5,520	0,31
Minnesota Territory,	80	85	1,00
Oregon Territory,	15,382	28,686	1,27
Utah Territory,	3,262	9,222	2,82
New-Mexico,	377,271	30,901	0,08
	21,571,306	52,417,287	2,42

It appears that the average is higher, by six-tenths of a pound, in Vermont, than in any other State. Massachusetts comes next, and then Maine. These are the only States where it exceeds three pounds. In New-Mexico and California, probably, the sheep are raised for mutton and peltry, and few

of them are sheared; for though we find a very regular diminution in the weight of fleeces as we proceed southward, it is not credible that fleeces actually sheared, should average only about five ounces in California, and only about an ounce and a quarter in New-Mexico.

The weight of fleeces in Vermont is not owing wholly to the latitude or temperature; for if it were, New-Hampshire and Maine ought to yield heavier fleeces still. It is, doubtless, in part, caused by the quality of the pasturage, air, and water, of the Green Mountain range; an advantage in which Massachusetts partakes. Another, and a principal cause is, the superiority of the breeds raised here. Almost all the sheep there are descended from the best flocks in Spain; and it has been long since ascertained that, with decent treatment, they do not deteriorate in Vermont. Not improbably, most parts of the Allegheny range may be found nearly or quite as well adapted to the same breeds.

The fleeces in Vermont are very nearly 20 per cent. heavier than those in any other State, and 52 per cent. heavier than the average of the whole United States. The profit of wool-growing, compared with lighter fleeces of equal fineness, is about in the same proportion; for the rearing and support of a poor sheep is as costly as of a good one. But, besides this, the fleeces are much finer than the average of the whole country, and bring a higher price per pound. It is plain, therefore, why the Vermont farmers go into the business so much more generally and extensively than those of any other State. It is plain, too, what farmers of other States must do, if they would reap the same profits from this business.

There are towns in New-Hampshire, where sheep of the same breeds yield the same profits; and so in some other States. It is probable, however, that in this staple the Northern States will always retain some advantage over the Southern, and the mountains over the plains.—*Boston Traveller.*

AGRICULTURAL SOCIETIES AND EDUCATION IN TENNESSEE.

In an address delivered by Governor A. V. Brown, before the "Agricultural College and Mechanics' Institute," established by the State, for the improvement of that people, the following passage occurs:

"In no portion of the State would the results of that success be more striking and gratifying than in East Tennessee. For more than half a century you have been mountain-bound, and consequently excluded, save at vast expense, from the great market places of the world. Deprived by the fiat of nature of the usual stimulus to action, you have put forth no great agricultural or mechanical exertion. Your houses were not promptly and neatly repaired; your orchards were left unpruned and neglected; your best grass and meadow-lands were unreclaimed; your fields were cultivated with a slovenly indifference, both as it regards durability and production. Indeed, the whole aspect of your country was that of a dissatisfied and desponding people, ready to seize the first opportunity to sell out and be off to some new and more favored land. But now how changed the scene! The genius of internal improvement has waved his magic wand over you, and house, and field, and orchard, all the splendid exhibitions of this day's fair, proclaim you a contented, happy, and prosperous people. The traveler pauses and tells

you in vain of the rich prairies of Texas, or the deep alluvion of the Arkansas. Even his gorgeous description of the diamond-studded and gold-glittering California can extort from you nothing more than the reply, 'East Tennessee is good enough for me.' And so it is, my countrymen. After years of travel and observation, I cordially endorse the sentiment, that East Tennessee *is* good enough for you—good enough for any body. Where, upon this continent, can you gaze upon a more varied and lovely landscape than now spreads out before you! Hill and dale, forest and field, torrents gushing from the mountain side, and streamlets gently flowing through valleys fragrant with flowers of perpetual bloom! Further off in the distance, we behold mountains in which lie imbedded, in close proximity, the largest supply of coal and iron ore that the whole Appalachian chain can boast. In the opposite direction, but in full view, lies another range of mountains, from whose bosom are daily borne inexhaustible treasures of copper, and other valuable minerals. Between these mountains lie a succession of luxuriant valleys, irrigated by streams of unrivalled purity, and capable of sustaining in elegance and plenty tenfold their present population. Into these valleys the iron horse is already making his resistless way, and waking to his fiery tread the slumbering echoes of six thousand years. When to these mere geographical advantages we add the charms and attractions of a population of whom it may be well said, without poetic license,

'Where Man is brave, and Women true,
And free as mountain air,'

who would exchange his own native or adopted East Tennessee for any other land on the globe!"

THE GREATEST GRAIN PORT IN THE WORLD.

THE *Democratic Press*, printed in Chicago, claims that that city is the greatest grain port in the world, and proceeds to give the evidence which supports such a claim. The exports from European parts are given at an average of several years:

"Those of St. Louis for the year 1853, those for Chicago and Milwaukie for the current year, and those for New-York are, for the past eleven months, of the same year. With these explanations, it invites attention to the following table:

	Wheat, bush.	In. Corn, bush.	Oats, Rye, and Barley.	Total, bush.
Odessa,	5,600,000		1,400,000	7,040,000
Galatz and Ibrelia,	2,400,000	5,600,000	320,000	8,320,000
Dantzig,	6,080,000		1,328,000	4,405,000
St. Petersburg,		all kinds.		7,290,000
Archangel,		"		2,528,000
Riga,		"		4,000,000
St. Louis,	3,082,000	918,384	1,081,078	5,081,168
Milwaukie,	2,723,574	181,937	841,630	3,747,161
New-York,	5,802,452	3,627,883		9,430,335
Chicago,	2,996,924	6,745,588	4,834,216	13,786,727

By comparing the exports of the different places mentioned in the above

table," says the *Press*, "it will be seen that the grain exports of Chicago exceeded those of New-York by 4,296,293 bushels; those of St. Louis by more than two hundred and fifty per cent. Turning to the great granaries of Europe, Chicago nearly doubles St. Petersburg, the largest, and exceeds Galatz and Ibrelia combined 5,406,727 bushels.

Twenty years ago, Chicago, as well as most of the country from whence she now draws her immense supplies of breadstuffs, imported both flour and wheat for home consumption; now, she is the largest primary grain depot in the world, and she leads all other ports in the world, also, in the quantity and quality of her beef exports! We say the largest primary grain depot in the world, because it can not be denied that New-York, Liverpool, and some other great commercial centres, receive more breadstuffs than Chicago does in the course of the year, but none of them will compare with her, as we have shown above, in the amount collected from the hands of the producers.

What a practical illustration the above facts afford as to the wonderful, the scarcely credible, progress of the west—what an index it furnishes to the fertility of her soil, and to the industrious and enterprising character of our people—what a prophecy of the destiny that awaits her, when every foot of her long stretches of prairie, and her rich valleys, shall have been reduced to a thoroughly scientific tillage!"

POST OAK GLADE LAND.

A farmer in Texas wishes to know "whether or not there is any method of reclaiming what we call 'Post Oak Glade,' which is a wet land of whitish or ashy color, most of the growth being Post Oak, with a few scattering Pines." He further says: "Such lands are apt to bake after heavy rains." A writer replies (in the *Southern Cultivator*) as follows: "I take it, this quality of land is better adapted to cotton than any other crop. I suppose it has too many silicates already without the use of lime.

Will 'A Subscriber' try ten acres on my plan? It will cost him nothing. Bed up the land in the spring, five inches deep, and that is very deep, (though I do not suppose he will think it deep until he puts the rule to it,) elevating his bed as high as a "dagon" plow of this depth will do; plant on the top of the bed, covering shallow. In this country, I would not plant his land before the first of May; with him, I advise him to plant at *least* one month after other planters. In cultivation, never go more than one and a half inches below the surface, and, in the latter part of cultivation, below one inch from the surface; cultivate either with a cultivator or with a sweep, cutting as deep at the outside of the wings as the point.

I am mistaken, if 'A Subscriber' will justly pursue this plan, if he does not gather from 1000 to 3000 pounds per acre. I am also mistaken, from his description of his 'Post Oak Glade Land in Texas,' if it is not the very best *cotton* land in Texas. If I am right in the character of his land, it is a cold land, one on which, by ordinary culture, a good stand of cotton can not be obtained. 'A Subscriber' must not plant this land until hot weather has set in, and then only by elevating the plant above the level, and as far above as he can, with five inches depth of bedding."

BOG MEADOWS RECLAIMED.

The following account of a reclaimed bog describes one of the most successful experiments we remember to have noticed. We find it in the Transactions of the Middlesex County Society, (Ms.,) in the statement of Mr. Asa G. Sheldon, of Wilmington, who is one of the enterprising farmers in that region. Mr. Sheldon's statement is as follows:

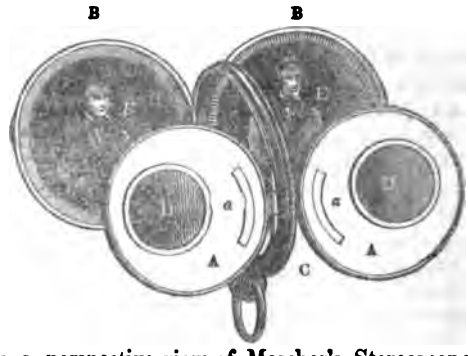
"The swamp land I offered for premium, in 1843, was blueberry swamp, with some few maples and white pine; value not more than ten dollars per acre. I first dug a ditch through the centre of it, about forty rods in length, which cost sixty cents per rod, making twenty dollars. Then I cut off the wood and brush, which barely paid for cutting. In the fall, the manure was taken from the slaughter-yard and barn-cellar, teamed to a side-hill near the swamp, mixed one load of strong manure with three loads of blue clayey gravel. This was done in September. In the winter, when the swamp was frozen, this was teamed on, tipped up in loads, and then covered with sand. In April, 1844, it was all overhauled. In May, I commenced digging over the swamp, and planting potatoes, putting a small shovel full of this compost in a hill. I found the depth of mud to vary from eighteen inches to nine feet. Where I found the mud deep and good digging, I dug five or six feet deep, filling the holes with blackberry roots, small stumps, and hassocks, within eighteen inches of the top, then covering it over with mud from the next hole, planting potatoes on the same. The clearing and planting were both done at once. The piece managed in this way was not less than two acres. A man would clear and plant from four to six square rods per day. Wages, at that time, were a dollar a day. Cost of clearing and planting, thirty-two dollars per acre. Cost of ditch, ten dollars per acre, making, in all, forty-two dollars per acre. The crop of potatoes was not less than two hundred bushels per acre.

Grass-seed was sown on the ground when the potatoes were dug, and the ground raked over. In 1845–6–7–8 and 9, making five years, it produced as good a crop of English hay as I ever raised upon any ground, without any manure except what was put on the first crop of potatoes. In 1850, the crop of grass began to fail, and some wild grass came in. In September, 1850, I plowed it by hitching the plow behind a pair of wheels, so that the oxen could walk on the grass. In the winter, when it was frozen, I teamed on manure, all kinds being mixed, about four cords to the acre. I planted it in 1851 with potatoes; the crop was from three to five hundred bushels to the acre. Finding this much more profitable than hay, I have managed it in the same way until the present time. When the potatoes have been dug early, before they got their full growth, I have not obtained so large a crop. When they have been allowed to remain in the ground, they have never failed of yielding three times as much as the upland.

The present season I invited the town clerk, with a number of other gentlemen, to witness the measurement of the ground, and the digging and measurement of the potatoes. From this, which I enclose, you will see that the crop can not be valued at less than three hundred dollars per acre, many having now been sold for more than one dollar and fifty cents per bushel."

Wilmington, Oct. 2, 1854.

IMPROVED STEREOSCOPE.



The above is a perspective view of Mascher's Stereoscope Medallion, for which a patent was granted January 16th, 1855. It is represented as open, or as it is used for viewing the two stereoscopic daguerreotypes, or other photographic pictures, which, by its optical arrangement, are made to appear as one, and that not a mere flat representatien, but a form standing up out of the substance on which it is drawn like a substantial, living thing.

The following is a description of the engraving at the head of this article: C is the main central rim of a locket; B B are two lids with daguerreotype pictures, E E, on them; these lids are hinged on each side of the rim, C. A A are two supplementary lids, each containing a lens, D D. These are also hinged to rim C, as shown, but are fitted to fold within the picture lids, B B, and are arranged in such relation to the same, that, upon being opened and properly adjusted, the lenses, D D, will stand opposite to the pictures, and convert the medallion into a stereoscope, by which a person looking through the glasses, D D, will see but one picture, solid and life-like. The patentee has applied double convex lenses to these medallions, the sides of which are of unequal convexity, (as one to six,) according to Brewster, so that the picture is rendered very clear. A medallion of this character can also be used for a microscope and sun-glass.

This property of the stereoscope, of converting two flat pictures into one raised, substantial, life-like statue, appears, as yet, to be but little understood, and, consequently, but little appreciated by the public; and we can assure our readers, that they can form no adequate conception of the beauty of this invention, until they have, with their own eyes, looked through the two lenses, at the two portraits opposite them. The resulting picture looks no more like either of its component pictures than a circle does like a globe. The medallion is made of gold, and when folded up, it is impossible to distinguish it from the locket commonly worn. When closed, it measures one and three quarters inch diameter, and three-eighths of an inch thick. The engraving represents a No. 9 medallion, which the inventor sells for $12 each, but he has applied the same principle to No. 7 and 8, some of which, he informs us, he will shortly have on sale, at $10 and $11 each, respectively.

This medallion, with pictures, together with a handsome morocco case, in which it can be very safely kept, when not in use, weighs only three ounces, consequently it is admirably suited to send by mail to distant friends or relatives.

This locket exhibits the most extraordinary adaptation of means to ends that we have ever witnessed. Every particle of room is occupied, and is a most striking contrast to Prof. Wheatstone's first, and even to the most perfect foreign stereoscopes which are sometimes imported. Theirs are boxes occupying one-half of a cubic foot, this, one-half inch; the best imported ones magnify very little, whereas this magnifies four times. Even the stereoscopic daguerreotype case, for which this same inventor also obtained a patent in 1853, is much superior with respect to portability, magnifying power, easy management, durability, and cheapness, to the best imported ones, but this last invention is an improvement upon that. Mr. Mascher has turned the tables upon the Europeans, for he informs us that he exports large quantities to England, France, and the Spanish possessions.

We see by the report of the judges of the Metropolitan Mechanics' Institute, at Washington, that they entertain the same favorable opinions of this invention that we do, for they have awarded to it the FIRST PREMIUM. A similar acknowledgement was also made by the Franklin Institute of Philadelphia, last December, to the stereoscopic daguerreotype case, for they awarded to it the first premium, besides recommending the inventor to the Committee on Arts and Sciences, with a view to a still more favorable report, a recommendation and award extended to no other depositor.

More information can be obtained by letter, by addressing I. F. Mascher, No. 408 North Second Street, Philadelphia.

For the benefit of daguerreotypists who are not familiar with this beautiful invention, we add the following directions, commending this style of preserving the very image of one's friends, to all who can afford this choice luxury. For, we repeat it, the difference between this style of representation and the common daguerreotype, is greater than between a common painting and a correct statue; for in this is the appearance of life.

DIRECTIONS TO TAKE AND PUT UP PICTURES.

"PREPARE two plates, of such size that the two, when pasted together, will fit the size of case intended, ready for the camera, in the usual manner, and if you have two cameras of the same size and quality, set them about two feet apart, and at equal distance from the person or subject intended to be taken. Draw the focus correctly in each, and take both pictures at the same instant of time, finish them in the usual manner, and you will find that they are not exactly alike, but each picture looks to opposite sides of the plates, which is owing to the angle at which they are taken. Cut the plates so that they will fit the size-border intended, and paste them together in such a manner that both pictures look to the middle of the plates, taking care that both pair of eyes are parallel with the sides of the glass and border. For this purpose you must have a parallel ruler, which you can purchase at the optician's for 37½ cents. It is absolutely necessary that the pictures be parallel, for if they are not, you will invariably see two indistinct pictures.

Some artists turn out pictures in which one picture is at least one quarter of an inch lower down than the other. How is it possible to see such pictures correctly?

If you have only one camera, prepare your two plates as above, adjust the focus properly, and take one picture. Let the subject sit perfectly still until you move the camera about two feet either to the right or left, re-adjust the focus, and take the second. Finish and put them up as above.

Again, you can have a camera-stand made, having the table of which, say

two-and-a-half feet long, and as wide as your camera is long, say ten inches. Provide this table with one set of stops at each end for your camera to slide against. Now, previous to taking the picture, adjust the table in such a manner that the camera will be perfectly in focus at each end of the table. Make a slide for your plate-holder, with an opening in, so that it will expose half of the plate to the action of the camera. The camera is to be laid upon one of its sides, and both pictures are taken on one plate.

Lay the camera on one end of the table, and take one picture; put on the cap, and quickly move the camera over to the other end of the table against the other stops; move the slide in the holder, in the same direction you moved the camera, and the other half of the plate will be exposed; take off the cap, and take the other picture. This plan is in successful operation, and is very convenient and good, but, it is believed, not so perfect as taking them (pictures) with two cameras.

Lastly, you can take both pictures at one time, on one plate with an ordinary camera, by means of two reflectors. Pictures have been taken this way that are very good. This plan is very good, cheap, and convenient. For full description of which, see page 348, vol. XVI. *Silliman's Journal.*"

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

CULTURE OF THE ORANGE.

Messrs. Editors:—In your valuable journal I have never seen mention of fruit-growing in Louisiana. Have you no correspondent in this fair spot of our Union? Or are the Louisianians so absorbed in *sugar-making*, than they have no time to devote to this beautiful occupation? There have been very fine peaches and pears raised in Louisiana; and I am sure that if one would wish to write upon the subject, he would find enough to make quite an interesting article for your paper. There is a fruit which I will introduce to your notice, and to the journal also. Would that I could make you more nearly acquainted with its sweet and delicious properties and qualities, than by a mere article in the paper! A rich, juicy, delicious Louisiana orange is what no editor, but New-Orleans editors, often enjoy.

The portion of Louisiana best adapted to orange growing is the Parish of Plaquemines, situated on each side of the Mississippi River, below New-Orleans. There are several fine orange groves in this parish; one in particular, consisting of three thousand trees. It is called "Essayons;" the motto on the button of the U. S. Engineers—meaning "let us try." It was planted by an engineer officer, and is now owned by his heirs. Fifteen hundred of these trees are nine years old; the rest are, some eight, some six years old. Ten years is generally the time for a tree to mature. After this period they are the most profitable crop a man can raise; for a tree will produce from fifteen hundred to two thousand oranges, which bring at his door $15 a thousand sometimes; never less than $10. If you will count up the thousands from the Essayons Grove at that rate, you will see that it will be quite a *small* fortune after a while.

The orange, as well as the lemon and citron, never sheds a leaf of its foliage. Every year adds new branches and new leaves. The same branch will not bear two successive years. A tree, in the course of one year, will

sometimes, if luxuriant in its growth, put forth nine or ten branches, five or six feet in length. The tree will mostly make wood till it is ten years old; after that it seems to reserve all its energies for the formation of the fruit. The seed is first planted in a nursery, then transplanted, at the age of one or two years, on the spot where it is destined to grow. The trees are put twenty feet apart each way. Some plant them at fifteen; but the best way is to give them ample room for the roots to run. The roots are not more than three inches from the surface of the ground, with the exception of the tap-root. The plan now is not to trim at all, if possible. A tree left to its own natural disposition, will make a most beautiful, symmetrical production. They require no manure, but the virgin soil of Louisiana seems to suit them admirably. They will get scrubby in old soils.

There are some of the diseases which attack orange-trees which are quite unmanageable. I will mention two very frequent ones. The lice is a small, blue insect, which covers the tree, bark, leaves and all. They will feed upon the leaves, and, in a few months, disrobe an orchard of four or five hundred trees, leaving them as bare as your hand. The tree, at the end of a year or so, will recuperate, and again put forth its leaves, and bear its wonted treasures, but not in so great abundance. Another, and apparently irremediable trouble, is a kind of dry rot which attacks the trunk of the tree, at its base, just where the root begins. It is at first a small spot, not more than a quarter of an inch large, but soon runs in a ring all round the base of the trunk, which brings a speedy death to the tree. The only remedy is to dig up the invalid by the roots, and consign it to the embrace of the Father of Waters, putting in its stead a healthy tree, that will repay your care and labor.

If any of your subscribers can give us through your paper a remedy for these evils, he will benefit a goodly interest in Louisiana. The Louisiana orange is much superior to the Havana or Sicily, for the reason that these have to be plucked green to be sent here, while ours are given us in all their full, rich, native growth and sweetness.

The best time to plant orange trees is in March, from the 15th to the last; before that it is generally too cold. Anything which will improve the culture of the orange will be quite acceptable in your columns to at least *one* of your subscribers. Respectfully yours, A. S.

Native Coffee.—The Calaveras *Chronicle*, Cal., says that wild coffee is found in abundance in that neighborhood, similar to the plant cultivated in Mexico, South and Central America. The berries resemble those of the genuine coffee plant.

Chalk.—A specimen of this calcareous earth was shown us this week by A. G. Lawrence, Esq., of Campo Seco. It forms the base of a hill in that vicinity, the surface of which is a volcanic drift, containing a very rich gold deposite, which pays from $3 to $10 a cart load. The chalk hill has not been penetrated to any considerable depth, but it is likely that underneath this deposite gold will be found. A curious phenomenon may be observed at this hill—one part of it is composed of chalk, while the other is the usual red clay formation, the line of demarkation being plainly visible.—*Cal. Chronicle.*

COLORS OF HANGINGS, FURNITURE, ETC.

We have been exceedingly pleased with an article upon "Color in Nature and Art," written by one who proves himself well qualified for the task, in a recent number of Blackwood. We have hitherto acted on the belief that cultivation of this sort is of great importance—scarcely less than the cultivation ordinarily discussed in agricultural journals. For lack of acquirements of this sort, so many of our wealthy families are as utterly destitute of good taste in their household arrangements, as they can well be. Many a poor man's hovel, in rural districts, or in the city even, exhibits far greater proficiency in these matters. Even our upholsterers have learned nothing, and generally know nothing, about them. All they can do is to imitate their predecessors, who were just as ignorant as themselves, or to imitate somebody whom they accidentally met with, who did so-and-so, and, it may be, under *totally different* circumstances. Hence, we see what we see in our gorgeous mansions—a genuine Indian display of brilliant colors, exhibiting about as much science and skill as we should find in a medium Crow Indian. Some of these natives, as our own eyes have had the evidence, have, by intuition, a far more cultivated taste. But our object is only to present an extract, and commend it to general attention. After discussing sundry relative topics, the writer proceeds thus:

"In coming to the furniture of our dwellings, it must be confessed that, so innumerable are the possible combinations of color, it is impossible to lay down many laws of general application. In large rooms, bright, contrasting colors may be employed; whereas, in small rooms, the harmony should be not of contrast, but of analogy; in other words, the furniture of small rooms should in general have but one predominant color, and the contrasts exhibited be only those of tone. On this principle, hangings with varied and brilliant colors, representing flowers, birds, human figures, landscapes, etc., may be employed in the decorating of large rooms; whereas, chintzes are only suitable to small rooms, such as cabinets, boudoirs, etc. In bed-rooms, the window-curtains and those of the bed should be similar; and if there be a divan, it may be similar also; for we may remark, that it is conformable with the object of boudoirs, and similar places, to diminish their extent to the eye, by employing only one material for the hangings and chairs, instead of seeking to fix the eye upon many separate objects.

Of hangings—and our remarks are almost equally applicable to the general tone of a room—we may say that, in consequence of an apartment never being too-light, since we can diminish the day-light by means of blinds and curtains, it is best that the hangings be of a light and not of a dark color, so that they may reflect light rather than absorb it. Dark hangings, therefore, are proscribed, whatever be their color. Red curtains are to be met with very frequently in this country; yet it must be said that red and violet, even in their light tones, ought to be proscribed, because they are exceedingly unfavorable to the color of the skin. Orange can never be much employed, it fatigues the eye so much by its intensity; and, indeed, among the simple colors there is scarcely any which are advantageous, except yellow, and the light tones of green and blue. Yellow is lively, and combines well with mahogany furniture, but not generally with gilding. Light-green is favorable, both to gilding and to mahogany, and also to complexions, whether pale or rosy. Light-blue is less favorable than green to rosy complexions, especially

in day-light; it is particularly favorable to gilding, associates better than green with yellow or orange-colored woods, and does not injure mahogany. White hangings, or hangings of a light gray, either normal, or tinged with green, blue, or yellow, uniform, or with velvet patterns similar in color to the ground, are also good for use.

In regard to the draping of floors, it must be borne in mind, that for a carpet to produce the best possible effect, it is not enough that it is of the best manufacture, and of excellent colors and pattern; it is also requisite that its pattern be in harmony with the size, and its colors with the decorations of the room. It is important for manufacturers to know how to produce carpets which will suit well with many different styles of room furniture; and, in our opinion, the best mode of attaining this end is, to make the light and bright coloring commence from the centre of the carpet; for it is there (that is to say, in the part most distant from the chairs, hangings, etc.) that we can employ vivid and strongly-contrasted colors without inconvenience. And if we surround this bright central portion with an interval of subdued coloring, we shall be able to give to the framing colors (those around the margin of the carpet) a great appearance of brilliance, without injuring the color of the chairs and hangings. With respect to the carpets of small or moderately-sized rooms, we may lay down the rule, that the more numerous and vivid the colors of the furniture, the more simple should be the carpet, alike in color and pattern—an assortment of green and black having, in very many cases, a good effect. On the other hand, if the furniture is of a single color, or if its contrasts consist only of different tones of the same color, we may, without detriment, employ a carpet of brilliant colors, in such a way as to establish a harmony of contrast between them and the dominant hue of the furniture. But if the furniture is of mahogany, and we wish to bring out its peculiar color, then we must not have either red, orange, or scarlet, as a dominant color in the covering of the floor.

The covering of chairs may present either a harmony of contrast or a harmony of analogy with the hangings, according as the room is large or small; and a good effect may be produced by bordering the stuff at the parts contiguous to the wood with the same color as the hangings, but of a higher tone. Nothing, we may add, contributes so much to enhance the beauty of a stuff intended for chairs, sofas, etc., as the selection of the wood to which it is attached; and, reciprocally, nothing contributes so much to augment the beauty of the wood, as the color of the stuff in juxtaposition with it. In accordance with the principles of coloring which we laid down in a preceding part of this article, it is evident that we must assort rose or red-colored woods, such as mahogany, with green stuffs; yellow woods, such as citron, ash-root, maple, satin-wood, etc., with violet or blue stuffs; while red woods likewise do well with blue-grays, and yellow woods with green-grays. But in all these assortments, if we would obtain the best possible effects, it is necessary to take into consideration the contrast resulting from height of tone; for a dark blue or violet stuff will not accord so well with a yellow wood as a light tone of these colors does; and hence, also, yellow does not assort so well with mahogany as with a wood of the same color, but lighter. There is no wood more generally used by us than mahogany, and no covering for sofas and chairs more common than a crimson woolen stuff; and in this we are influenced not so much by any idea of harmony, as by the two-fold motive of the stability of the crimson color, and the beauty of the mahogany. In assorting these, we will often do well to separate the stuff from the wood by a cord or narrow galloon of yellow, or of golden-yellow, with gilt nails; or,

better still, a narrow galloon of green or black, according as we wish the border to be more or less prominent. The red woods always lose a portion of their beauty when in juxtaposition with red stuffs. And hence it is that we can never ally mahogany to vivid reds, such as cherry-color; and more particularly to orange-reds, such as scarlet, nacarat, and aurora; for these colors are so bright that, in taking away from this wood its peculiar tint, it becomes no better than oak or walnut. Ebony and walnut can be allied with brown tones, also with certain shades of green and violet."

CULTIVATION OF THE TOMATO.

This most delicious fruit deserves better cultivation than it often receives. We find the following in the March *Horticulturist*, and commend it to the notice of our readers:

"Let every one who has a tomato plot,—and who that has a garden has not,—notice the plants when in full bearing—and one or more *will* show more excellence than the others—pick from the very best the most desirable fruit, and save them for seed. Repeat this each season, always having an eye to form, color, productiveness, flavor, and size; and if no improvement takes place, then consider the writer an ignoramus. I have followed the above plan for several years, and the result is quite satisfactory; and so it will be to others if adopted. Let this be more generally done by private growers; let them raise their standard of excellence, and the awarders of prizes at the public exhibitions follow suit, and the large growers for market will soon be forced to take a better sample to the city, instead of the thick-skinned, hollow subjects, which are too often seen on the huckster's stall, and which "bounce" like a foot-ball. We shall then have weight and quality, in return for good money.

GENERAL CROP.

To get the general summer supply, and likewise as early as possible in the open ground, it is advisable to have strong and healthy plants ready to be turned out in a warm aspect, so soon as all danger of frost is over; or where there is the convenience of glass box-frames, a portion may be planted therein two or three weeks earlier, some at the distance apart that it is intended they should remain. A good start is a great advantage, and fine plants will furnish fruit much earlier, and in more abundance through the summer, than those which are weak and stunted to begin with; consequently, the little extra trouble required is more than repaid. The common plan of sowing on a hot-bed, and leaving the plants to crowd each other up till planting time, and then removing, almost without roots, only partakes of the "penny-wise and dollar-foolish" action that is too often practiced, and always ends in keeping the per centage profits small. Yet we see persons, who ought to know better, still drawing along in the old way; and when thing go wrong, blaming everything but their own want of observation and foresight. All kitchen vegetables, without exception, are of the best quality when well grown, and nothing deteriorates this quality more than starving the young plants in the seed-bed. Do not be in too great hurry to begin, but, when started, take care that there is no check until ready for use, is advice that all vegetable

growers ought continually to act up to. In the present instance, the seed may be sown about the middle of February, on the surface of a gentle hot-bed, upon which is three or four inches of good friable mold, and covered over with a box-frame; or in boxes in a hot-house, where a temperature of 50° to 55° by night is obtained. When the plants are two or three inches high, transplant either into another or the same bed, or into boxes about six inches apart. Where the required supply is not large, they may be put up singly into pint pots; and, after planting, give a light watering to settle the soil around the roots. Admit all the light possible, and, in mild days, let in a good supply of fresh air, but avoid cold winds and frost; the object being to keep a moderate temperature, without checking the progress of growth, and yet not so warm as to draw plants up weak. As the weather milds off, the glasses may, in fine days, be entirely removed. Pots or boxes are only necessary when the hot-house is used; and, in the former case, when they become filled with roots, the plants ought to be moved into those of a larger —say two quarts. By the first week in April, both may be removed into a cold frame, and kept close for a day or two; after which air should be freely admitted during warm days, and gradually increased, until the glasses are entirely pushed down, but be careful to cover at night when frost is apprehended.

It is often amusing, and sometimes even annoying, at the beginning of summer, to see our neighboring cottagers scouring over the country in search of tomato plants. Almost everybody who has a patch of ground wants them, and, in many cases, they are not to be had "for love or money;" yet they have the means at command to raise for themselves; every house has its window, and the only space required, is enough room for a box two feet long, by six inches wide, and four inches deep, and anybody of ordinary ingenuity can fix a little glass frame over this, to counteract the dry atmosphere of a dwelling-room; such a simple contrivance will accommodate as many plants as will be required, and be less expense, than the loss of time and shoe-leather that is expended in troubling other persons, who, too often, have only time and convenience for their own stock.

Almost any kind of soil will answer for the tomato; but it prospers the best, and produces fruit of a finer quality, in a well-drained, tolerably-fertile, but not over-rich loose mold. So soon as all danger of frost is past, begin to plant out; loosen up the soil well, dig holes four feet apart, six inches deep, and as many across; lift each plant with a ball of earth; do not keep the roots exposed longer than is necessary, and, in fixing the plants in the holes, let them be placed about the same depth as they were previously; cover up, and press the soil somewhat around the neck, and lift a little extra up to it, which will encourage fresh roots and strengthen the plant. If the weather be dry, give a good soaking of water; and so far all is finished.

A few words may be said about training. The most common mode is to spread out the branches, and let them trail along the ground, in which case, if cleanliness be cared for, there ought to be a covering of marsh hay or straw placed over the surface. Sometimes brush-wood is laid flat, and the branches allowed to lay over the top of it, which elevates the fruit above the soil, and prevents it from rotting, if the season should happen to be wet; but there is no other advantage in the method, and it is inconvenient when gathering. The neatest and cleanest plan, and one which may be adopted in all private establishments, is to sink poles in an upright position along each row, leaving the tops five feet above ground, (if placed four yards apart, it will be close enough,) and fasten wires horizontally to them, which will form a cheap

trellis to train upon. As the branches elongate, they may be tied loosely to these wires, and a kind of hedge-row is formed with very little labor—the fruit is free to the action of air and light, and is unquestionably of much better flavor.

SUCCESSION CROP.

Notwithstanding the extreme fruitfulness of the tomato, it often happens that the earliest planting becomes exhausted before the end of summer, and only produces a decreased quantity of inferior fruit, when a succession becomes useful. In this case, it is only necessary to sow in the open ground about the middle of April, and transplant as recommended above. The plants from this stock will continue to yield with certainty until cut down by frost, and, if covered over at night, may be kept bearing longer than if unprotected.

GROWING THROUGH WINTER.

There is no difficulty in growing and fruiting the tomato through the winter and spring months, where such is desired. Indeed, no fruit-bearing plant is more easy to manage thus artificially, with the possession of a suitable structure. A close and sheltered glazed pit is the best and most economical, although a moderately warm plant-house is nearly equally convenient; but there must be *a full exposure to the sun*, or the blossoms will not fertilize. The seed may be sown the last week in August, and when large enough for transplanting, remove the plants into the house, having previously prepared for their reception. A suitable provision may be made by fixing boards, with the sides upright, along the inside front of the house, and three feet from it; fill in one foot deep with good, fresh mold, and place the plants three feet assunder in the bed so formed. If this arrangement can not be adopted on account of some peculiarity in the house, large boxes, filled with rich earth, will answer the purpose to almost equal advantage. As the plants continue to grow upward, train them near the glass, in the same way as a grape-vine, only allow the side shoots to spread out, so as to cover the whole surface so far as they extend. This may be done very simply by stretching copper wires horizontally along on the under side of the roof, and eight inches from it. After planting, give plenty of air till cold nights come on, when a little fire-heat is necessary. The most suitable temperature through the night is from 55° to 60°; and this ought to be maintained pretty regularly. In the day-time, it may be allowed, with sun-heat, to rise to 75° or 80°, always admitting air on every suitable opportunity. In cloudy or foggy weather, it is well to keep close, or to give air very carefully, as the plants, if exposed to too much damp and cold, are subject to be attacked by a black mildew, which destroys the leaves and weakens the blossoms, rendering them abortive. If such should occur, sprinkle a little sulphur upon the coolest parts of the heating apparatus, and give a trifle more heat for a few days, when the pest will disappear. As the blossoms continue to expand, go over the whole once a day, when the sun shines, and give them a sudden but light flirt with the finger, which will liberate the pollen, and greatly assist impregnation, and nip out the end of each shoot, a leaf or two above the flowers, to help the embryo fruit to swell. I have never been troubled with insects in forcing this fruit, but if red spider (*acarus*) should appear, the sulphur will destroy it; and green or black fly (*aphis*) may be got rid of by fumigating with tobacco. No further care is requisite than occasionally removing superfluous or weak branches, withered leaves, and such like; and the crop, with attention, will continue to produce from Christmas until those in the open ground are ready for use."

RIPE GRAPES IN DECEMBER.

In accordance with your request, I herewith give you the *modus operandi* of growing grapes under glass, to ripen them by the December sun. My former practice, to ripen grapes about the first of April, was the same as practised by others, say warming the roots by hot manure in the middle of November, and continuing the heat in the border, by fresh supplies of manure, until the grapes ripened. I noticed the roots are injured from this practice, and the expense is very great, not only for the manure, but also for the labor of looking after the border and replenishing it. Not being satisfied, I concluded to try the following plan, which has proved quite successful, and gives me the grapes earlier.

We will suppose the vines were started in November of last year, (1853.) To get them in this state, their habits have been changed from the natural time of starting. Now we will encroach still further, and start them in August, say the first. You will find no delay in the pushing of the bud after pruning, as the roots are warmed by the summer sun, and there is no danger of killing the young rootlets from hot manure. The progress of the vines will surprise you: in a week they will require tieing up to the rafters, and very soon after you will be assured of a good crop of grapes from the fragrance of the bloom.

It is now of the utmost importance to attend in season to keep the heat in the border which the sun has so generously supplied, and a plan suggested itself to me from the practice of keeping ourselves warm by a blanket, of which I have manufactured some 600 pairs a day for the past ten years. It is therefore very natural that I should have thought of a blanket to cover the border to keep the heat in; but it would require a great many woollen blankets to cover a border one hundred feet long and forty feet wide, and a great many thicknesses to give sufficient protection. However, we have the principle in the thought, and now for the practice. Instead of the woollen blankets, I substituted two tons of meadow hay, very dry; this covered the border about one foot in thickness, and in order to keep it dry, I placed upon the top of it about six inches of wool waste and manure, to absorb the rain, until the frost should make it a more perfect protection. This has answered the purpose; the heat has passed from the border about three degrees a week from the first of December, at which time it was 60°, and the fruit has ripened perfectly. It was generally supposed by grape-growers that I should fail in color and flavor, as well as size, from want of sun in December; but my experiment proves that plenty of pure air is quite as important.

My mode of ventilating is entirely new, and appears favorable to the growth of the grape. The warming apparatus inside of the house is simply a stove at each end; consequently, the ventilation is complete, as the heavy, bad air is constantly rushing to the stoves and passing out of the tunnels. I do not, in speaking of this mode of ventilation, recommend stoves for heating in preference to the common furnace and hot-water pipes, but refer only to the principle of ventilation, which can be applied to the common furnace by conducting the air from the house to supply the coal instead of the outside air. This plan would as effectually draw off the bad air as my stoves.—*Correspondent Hovey's Magazine.*

THE PRACTICAL SCIENCE OF CANDLE-MAKING.

THE Belmont Candle Factory—in that curious London district, Vauxhall—presents a famous example of applied chemical science. Rather more than forty years ago, Chevreul, the French chemist, announced to the Academy of Sciences the important fact, that fatty bodies are of a compound kind. He it was who first pointed out that fat is not a simple organic substance, but a salt formed of animal acid, (margaric acid,) combined with an animal base, in such a state as to be severable, the acid then being obtained separately. This discovery—the essential base of the modern art of candle-making, the fatty acid set free from the less inflammable base, being wonderfully improved as regards its burning properties—led to the vast extension, in this country, of the stearic candle manufacture, so ably represented by what is so well known as "Price's Patent Candle Company;" and it is to the obtainment of this acid in a pure hard state, and at the cheapest possible manufacturing cost, that the candlemaker's chemist has since given his almost undivided attention.

This point gained, Chevreul, still pursuing his subject, came upon another fatty acid—oleic acid—originally developed in lard. Putting these purely scientific researches into the workman's hands, as in all such transitions, was a task of great difficulty, and it was not until a very few years ago that these discoveries, in fact, assumed a really practical and commercially valuable form.

Acting upon Chevreul's suggestion, M. de Milly, a Parisian candle-maker, set to work to disengage the acids from their base, "glycerine," by boiling the raw material, tallow, with thin cream of lime, on the principle of what is now termed "lime saponification." The glycerine dissolved in the water, the fatty acids combining with the lime. Sulphuric acid is then used for destroying this combination; the acid seizing on the lime, and setting free the fatty acids, pressure being finally employed to obtain the solid mass.

Thus far the French led the way in this curious manufacture; but, in 1829, our countrymen stepped in. At that date, Mr. James Soames patented a plan for separating the solid and liquid parts of cocoa-nut oil, and this process subsequently become the property of Messrs. Price, who were induced to establish large cocoa-nut kernel crushing mills in Ceylon, to keep up their supply of the now necessary cocoa-nut oil. Large plantations of cocoa-nut trees were made in Ceylon; and of these, now coming into bearing, Messrs. Price possess above 1,000 acres. The oil is obtained from the fruit by drying the kernel, and then crushing it under edge-stones—the reduced mass being subjected to cold pressure, for obtaining the best portion of the valuable oil, and afterwards to hot pressure for getting out the whole attainable oleaginous matter.

The solid matter resulting from this pressure, or the cocoa-nut stearine, was, in itself, a step in advance of the tallow product; but the candles now known as "composite," so independent of snuffers, were yet undiscovered. In 1840, Mr. J. P. Wilson, anxious to produce economical self-snuffing candles, for the particular purpose of the illuminations on her Majesty's marriage, found that cocoa-nut stearine, mixed with the newly-discovered stearic acid, produced candles burning with a good light, with the great advantage of requiring no snuffing attendance. They are the candles made on this general principle that

we now find in every grocer's shop, and in every dwelling-house, whose darkness is as yet undispelled by the brilliancy of gas.

Later chemical discovery—for it must be remembered that the whole routine has been the result of a continued chain of the elegancies of chemical research—led to the distillation of fats, previously acted upon by sulphuric acid, or by nitrous gases. The raw material now used is palm oil, and in the existing refinement of the process, six tons of palm oil are subjected to the action of 6¾ cwts. of concentrated sulphuric acid, at a temperature of 350° Fahr. Under this treatment the glycerine is decomposed, sulphurous acid gas is evolved to a considerable extent, and the fat is changed into a mixture of fat acids, dark in color, and possessing an elevated melting point. The product is washed, and it is then deposited in a still, from which the air is excluded by the agency of stearine.

In its original condition, palm oil is of a bright orange red tint, as thick as butter. After the acidulous treatment and the washing, it is changed to a hard black mass. The distillation separates this into the pure acids, brought over in the form of vapor, and the charred refuse matter left behind in the still. The distilled mass may be used for making cheaper classes of candles; or by being subjected to severe pressure, cold and then hot, it is brought into the condition necessary for making the Belmont sperm candles.

The cotton used as the wick is plaited, and then dipped in a solution of borax. It is this plaiting which gives the wick the slight curvature at the flame, and the preparation with borax renders the cotton somewhat less combustible, except at the point which we find is always bent over to the edge of the flame, where it is in contact with the air, and is consumed. The moulding of the fatty matter, or the disposition of the combustible mass round the wick, is effected in a frame, which has attached to it a box, with a wick bobbin for each mould, the movement being so contrived, that the action which expels one set of moulded candles, draws off enough wick for the succeeding operation. Of course, each candle is moulded upon the free end of the wick length, and the severance is effected by the agency of a traversing knife. Forceps are employed to hold each wick over the centre of its mould, the axis of the two being made to coincide with accuracy. In this condition, the mould is run through a steam-heated chamber to warm it, the required temperature being reached by the time the mould arrives at the filler. The filled mould then passes onwards, and, when cool enough to admit of the withdrawal of the forceps without injury to the moulded mass, the superfluous fat is removed, prior to the mould being emptied. All these motions are performed by means of guide railways—a clockwork precision being observed throughout the operation. Each apparatus contains 200 moulds, each mould having 18-inch bobbins, which, when full, hold 60 yards of wick.

Chemistry has done more for the candle manufacture than mechanics. Much yet remains to be done in the manipulatory processes, for at present, some wicks will get out of the candle's centre, whilst the bottoms occasionally turn out to be hollow. Hence, the very best candles are yet made by the old hand system.

During the early part of the present year, Mr. G. F. Wilson, the managing director of the works, introduced castor oil as a new and economical material for this manufacture. Castor oil, when treated with hyponitric, nitrous, or sulphurous acid, solidifies, and furnishes what is called "palmine." This palmine, when used after being pressed, is well suited for hardening tallow, as well as for mixing with wax. In making composite candles with it, it is mixed with an equal amount of hard fat acid.

In 1852, the Belmont works employed somewhere about 1,000 hands, turning out upwards of 100 tons of candles a week, of a value of £7,000 or £8,000. Since that time, the works have been surprisingly increased, the number of the employed being 2,000, working upon a capital of £700,000. They cover two acres of ground, besides further space at the Battersea offshoots.

But this extension was not equal to the necessities of demand, and an enormous branch from the parent undertaking has been just now got to work near Liverpool. The new works are named from Bromborough Pool, at which point on the Mersey they are placed. Here the vast area of 3¾ acres is actually roofed in with corrugated iron; fourteen steam boilers being fitted up to supply the great steam-heating power required in works of this kind.

These works, like their progenitors in London, are perfect models of good arrangement and management, and they approach about as near to the perfection of combined industrial operation as any existing example of the great factory system of modern times.—*Pract. Mech. Journal, Glasgow.*

TELEGRAPH ROUND THE GLOBE.

[The following paragraphs have been or are going "the rounds" of the press. We have not published or noticed them, because we see, or think we see, in them unmistakable evidence of humbug. Still, as we believe the thing is not only practicable, but will be, in fact, accomplished in a few years, on some more feasible route, we take this method of attracting the attention of the public to its claims.—Eds. P. L. & A.]

J. P. Shaffner, Esq., the editor of the *American Telegraphic Magazine*, has just returned from his expedition to Europe, where he has been making arrangements for the construction of an electric telegraph around the world. One object of his visit was to negotiate with the Danish Government for the exclusive right to lay a line over Greenland, Iceland, the Faroe Isles, and Denmark, for the term of one hundred years; and the acquisition of similar rights over Norway, Sweden, and Russia.

The scheme is a bold one, and large enough for any capacity. The route proposed is definitely traced, and seems quite practicable. From Labrador to Greenland is about five hundred miles. From the point of landing, the line is to extend underground around Cape Farewell to a point on the east coast of Greenland, favorable for a submarine connection with Iceland, A subterranean line across the eastern coast of that island will connect with a submarine wire running to the Faroe Isles, and thence to Norway. By this route there will be no submarine section of more than five hundred miles. Treaties with the Emperor of Russia contemplate the extension of the line from Stockholm, in Sweden, to St. Petersburg.

Mr. Shaffner proposes to run his line to Moscow, and thence into Asia, piercing Chinese Tartary, extending to the Sea of Ochotsk, and by the way of Kamschatka reaching Cooke's Inlet in North-America. From this point the line will be run along the Pacific coast to Oregon, and south to San Francisco, California, etc., etc. The earth will thus be girdled with one continuous and unbroken flame of electric light.

In the submarine department of this work, Mr. Shaffner has associated

with him Mr. John W. Brett, who has been the projector and successful constructor of the vast ranges of submarine and subterranean lines of the old world.

In these negotiations, Mr. Shaffner has been singularly fortunate. He has succeeded where the most skillful diplomats might have failed. He says that he had one great element of strength; that was, he was an *American*. His Majesty the King of Denmark intimated to him that he would not have considered the proposition had it come from a citizen of any other nation; but he informed Mr. Shaffner that he granted the patents under the belief that there would be no obstacles in nature that could be a barrier against the genius and enterprise of his countrymen.

PROPERTIES OF CHARCOAL.

THE following is an interesting article, by J. Stenhouse, F. R. S., in the *Journal of the Society of Arts*, London:—

"My attention was particularly drawn to the importance of charcoal as a disinfecting agent, by my friend, John Turnbull, Esq., of Glasgow, Scotland, the well-known extensive chemical manufacturer, Mr. Turnbull, about nine months ago, placed the bodies of two dogs in a wooden box, on a layer of charcoal powder a few inches in depth, and covered them over with a quantity of the same material. Though the box was quite open, and kept in his laboratory, no effluvium was ever perceptible; and, on examining the bodies of the animals, at the end of six months, scarcely anything remained of them except the bones. Mr. Turnbull sent me a portion of the charcoal powder which had been most closely in contact with the bodies of the dogs; I submitted it for examination to one of my pupils, Mr. Turnbull, who found it contained comparatively little ammonia, not a trace of sulphurated hydrogen, but very appreciable quantities of nitric and sulphuric acids, with acid phosphate of lime.

Mr. Turnbull subsequently, about three months ago, buried two rats in about two inches of charcoal powder, and, a few days afterwards, the body of a full-grown cat was similarly treated. Though the bodies of these animals are now in a highly putrid state, not the slightest odor is perceptible in the laboratory.

From this short statement of facts, the utility of charcoal powder as a means of preventing noxious effluvia from church-yards, and from dead bodies in other situations, such as on board a ship, is sufficiently evident. Covering a church-yard to the depth of from two to three inches, with coarsely powdered charcoal, would prevent any putrid exhalations ever finding their way into the atmosphere. Charcoal powder, also, greatly favors the rapid decomposition of the dead bodies with which it is in contact, so that, in the course of six or eight months, little is left except the bones.

In all the modern systems of chemistry, such, for instance, as the last edition of *Turner's Elements*, charcoal is described as possessing antiseptic properties, while the very reverse is the fact. Common salt, nitre, corrosive sublimate, arsenious acid, alcohol, camphor, creosote, and most essential oils, are certainly antiseptic substances, and, therefore, retard the decay of animal and vegetable matters. Charcoal, on the contrary, as we have just seen, greatly facilitates the oxydation, and, consequently, the decomposition, of any organic substances with which it is in contact. It is, therefore, the very opposite of an antiseptic."

THE SUBMARINE TELEGRAPH.

At a late meeting of the British Association, at Liverpool, Mr. J. W. Brett read a paper on "The Origin of the Submarine Telegraph, and its Extension to India and America." The author gave an account of the difficulties encountered in establishing the first submarine telegraph, which has now been successfully working for three years between France and England; and stated that he had established the submarine telegraph between England and Belgium with equal success, which had been in operation since the first of May, 1853. He then explained some of the difficulties he had encountered in laying down the two submarine lines in the Mediterranean in July last—especially in passing a depth exceeding, by 100 fathoms, what had previously been ascertained to exist on the route between Piedmont and Corsica. The depths encountered between England and France, and England and Belgium, did not exceed at their maximum 30 fathoms; whereas, the submarine cable was laid down in the Mediterranean at a depth of 350 fathoms, exceeding about eight times that of the English Channel. It was the general impression that the submarine cable would part by the great strain it would encounter in passing these great depths; for which reason he was strongly advised, and more particularly by one of the most able and experienced officers of the Sardinian Government, who accompanied and aided the undertaking, to make a detour of about eight miles by the islands of Gorgona and Caprija, where the soundings were known not to exceed 100 fathoms; but the great point to be considered was, whether he would not incur the risk of a total loss of the cable by not doing so. The prudence of these arrangements, Mr. Brett said he fully admitted; but that it was a question he was determined to solve at once—for as this telegraph was not a telegraph to Corsica, but part of a line to India, to be shortly completed to Africa, where still greater depths must be encountered, it was necessary to test the fact. He then explained the difficulties they encountered in paying it out, when, after the line had been paid out, as he believes, along the top of a submarine mountain for some miles, at a depth varying from 180 to 200 fathoms, it suddenly, as he believes, came to the edge of a precipice, making a total of 350 fathoms (exceeding by about 100 fathoms any depth marked in the various charts on this route,) where it ran out with frightful velocity; and had the cable been less strong, the whole must, of necessity, have been lost; and they were compelled, nevertheless, to anchor by the electric cable all night, to restore the injury that had occurred; but he felicitated himself upon the experience thus gained from his determination in taking the deepest route, as it had led to many valuable suggestions necessary to successful operations in great depths; and the able Commander, the Marquis Ricci, who up to this time had been in doubt of its success, then admitted that this kind of cable contained such remarkable elements of strength in its form and combination, that he believed only certain improvements to be necessary (on which we had been consulting,) to successfully lay it down even in the greater depths of the Atlantic. Mr. Brett, in conclusion, explained his reasons for selecting this line to India *via* Egypt, in preference to the line by the Italian peninsula, which would ever be impeded by the jealousies and restrictions of the petty States; whereas, to the shores of Africa, the Mediterranean telegraph passed through only the States of France and Sardinia, who had encouraged it by liberal guarantees, and admitted that all communications, in whatever lan-

guage, should pass unrestricted through their States. From Africa he stated he had two plans in contemplation for its extension to Egypt—one, a line dropped in the Mediterranean in the shallow line near the coast, and another buried in the sand along the shore—both of which he was satisfied might be laid secure from derangement of any kind. He then referred to the proposed telegraph to America, and of the depth on the proposed line, as recently ascertained by Lieut. Maury, of the United States, with some estimates of the weight and cost; and stated that a return of £100 to £150 per day would give a fair interest on the necessary capital; that his plan comprised several lines of communication; and that he entirely deprecated the idea of a single line of communication, which he believed could not be done.

FOREIGN EXTRACTS.

How Smoke is Made in London.—Statistical facts tell us that there are upwards of 3,000,000 tons of coals yearly borne into London, by sea and railway, and that somewhere about one-third of this amount is there consumed in furthering the ends of manufacturing industry. Now, it is a well-known fact, established by practice, that by the better consumption of smoke, and obtaining more perfect comustion, 20 per cent. of fuel is saved; hence 20 per cent. on 1,000,000 tons amounts to 200,000 tons of coal saved annually to the nation, and that, at an average cost of £1 per ton, is £200,000 saved to the metropolitan proprietors of furnaces and manufactories, which would otherwise pass off in smoke, contaminating the atmosphere. According to this calculation, it may be taken as a twofold and total saving to the nation of £400,000 per annum; and that without regarding it in a sanitary point of view, for as already the improved appearance of the London atmosphere is distinctly observable, it is unnecessary to point out the injury inflicted upon the public health, or the pecuniary loss we sustain in the apparently trivial matters of soap, and wear and tear of linen, by the deposit of the large amount of carbonaceous matter always present in the atmosphere, inasmuch as smoke cooled is soot, but when heated to 600° Fahrenheit, becomes highly inflammable gas, and is consumed; therefore, every wreath of smoke that curls up a chimney is fuel wasted.

Copper Mines, South Africa.—There is a likelihood of copper-mining being carried on near the north-western limits of the colony, at a place called Nemaqualand, on a large scale. The ore is said to be very rich in metal, and has realized from £40 to £60 a ton. It is so easily worked that three men can quarry and prepare a ton a day, worth nearly £40. In is said that it can be raised and sent to England at a cost of £13 a ton. The quantity of metal varies from £45 to £75 per cwt. Several companies have been formed to carry on mining operations, and some correspondence has been published between the Colonial Governor and the Secretary of State, as to the terms on which grants would be made of the lands underneath which the ore lies embedded. The great difficulty seems to be as to roads. Hondeklip Bay, forty miles off, is the nearest point of export, and hundreds of tons of ore have been brought to the surface, waiting for removal, which cannot be effected at any price. A railroad has been contemplated, but the necessary funds are not at present forthcoming.

GAS IN THE NORTH AMERICAN STATES.—Coals are obtained in large quantities from Britain and from Canada for the purpose of manufacturing gas in towns along the seaboard of North America. South of New-York, the oolitic coal-field of Virginia sends a portion of the supply; and in the states west of the Alleghanies, the nearest coal-field yields the whole required. In New-York, two companies supply the public with gas, and manufactured last year 300,000,000 of cubic feet. At Philadelphia, the municipal corporation are the only manufacturers. Last year they made about 232,000,000 of cubic feet. Gas is a good deal dearer in the United States than in Britain. In London, the average price is 4s. per 1000 cubic feet. The lowest price in America is at Philadelphia, where two dollars are charged for 1000 feet, that is to say, more than 100 per cent. higher. In Liverpool the price is a little higher than in London, the price at the former town being 4s. 6d. per 1000 feet. The laborers employed at the gas-works receive from one to two dollars a day, according to their skill and the demand for their labor. Some new gas-works, lately built at Philadelphia, are said to be of excellent construction and arrangement. They comprise a telescope gas-holder, 160 feet in diameter, and 90 feet in height, with twelve guide towers made of cast-iron and stone, in an ornamental form.

AMERICAN PATENTS.

IMPROVEMENT IN MACHINERY FOR COMBING WOOL. CHARLES G. SARGENT, of Lowell, Mass. Dated, August 15, 1854.—In this machine, the wool is pulled out from the main lot, and stapled in small successive portions before the operation of combing commences, by which means the fibres are drawn out and laid lengthwise, which much facilitates the subsequent operation of combing. It also causes the pincers or nippers, which draw out and staple the wool, to revolve continuously, any suitable number of them being brought up in succession to the feed-rolls, by which means the various operations of the combing process are caused to proceed simultaneously upon different portions of material, without the necessity, which has heretofore existed, of performing them one at a time, all the others being for the time interrupted. It is evident that the withdrawing of the separate portions from the feeding-rollers must be an intermittent operation, and it has been the object of the inventor to make this intermittent movement approach as nearly as possible to a continuous one, as the material is to be delivered from the machine continuously in an unbroken sliver.

IMPROVEMENT IN FIRE-ARMS. ELI WHITNEY, of Whitneyville, Conn. Dated, August 1, 1854.—Mr. Whitney claims the method of constructing the sear and lock-bolt in *one piece*, combined with the method of operating the same by the trigger and spring, so that the sear can not release the hammer, except when the chambered breech will be firmly locked in its proper position when constructed, combined, and operated; also, the combination of the trigger with the spring and the lock-bolt, (when the lock-bolt is of the *same piece* as the sear,) for locking the chambered breech, and discharging the pistol, when constructed and combined, substantially as herein described; also, the combination of the three springs (when they are all secured with one screw), with the catch-lever, trigger, and the lock-bolt and sear, when the whole is constructed, arranged, and combined, substantially as described.

LUBRICATING MATERIAL. WILLIAM LITTLE, of the Strand, County of Middlesex, England. Dated, August 1, 1854. Patented in England, July 14, 1853.—To 100 parts tallow, melted in a cauldron, add 235 parts of a solution of ten or eleven deg. B. of caustic soda in water. This mixture is boiled until saponification takes place, when ninety parts more of water are added, and the whole again boiled until the ingredients are thoroughly combined. To this add a potash soapy compound, prepared by seventy parts of a solution of caustic potash, equal to eight or ten degrees B., boiled with thirty parts of a fish or vegetable oil, until saponified. These two compounds being thoroughly mixed by boiling, are poured into a vessel containing 150 parts of the greasy oil distilled from the crude oil of coal, and the whole well mixed by stirring, until it acquires a thick consistence. This compound is to be used for the journals of railway carriages, etc. For ordinary machinery, mix two parts of the greasy oil with one part of the above mentioned soapy compound, add eight parts of water.

IMPROVEMENT IN TUBULAR BRIDGES. EDEN A. BALDWIN, of Elmira, N. Y. Dated, August 8, 1854.—This invention consists in constructing a tube of sufficient diameter for the passage of a railway train, using planks, or other suitable timbers, placed longitudinally and dowelled together, and the whole firmly bound with strong iron rods or hoops. For this purpose may be used oak plank, two or three inches thick, as the size or strength of the bridge may require, and of uniform width. The hoops or bands to be made of $1\frac{1}{2}$ or $1\frac{1}{4}$ inch iron rods, which are first made of the necessary form and size, and set up at the distance of five feet apart. The planks are then laid in them, beginning at the bottom and proceeding on each side until they meet at the top, taking care that the ends shall break joints. The joints are all formed on an exact radical angle, on the principle of an arch, and each plank is dowelled to the next one with strong wooden pins, one foot apart. Then the bands are tightened.

IMPROVEMENT IN COTTON PRESSES. NATHAN CHAPMAN, of Mystic River, Conn. Dated, August 8, 1854.—The nature of this invention consists in having the hubs of the toothed wheels, on which the chains which raise the follower work, formed with recesses in them to receive the ends of the chains when wound up, and thereby cause said chains to exert a pressure inside of the bearings of said wheels, and retain the follower in its elevated or raised position, without any device being employed for that purpose.

IMPROVED MACHINE FOR UNITING PLATES OF METAL OF UNEQUAL THICKNESS. JEREMIAH CARHART, of New-York, N. Y. Dated, August 1, 1854.—This invention is for the purpose of uniting two plates or pieces of metal, of unequal thickness, by placing them together between a punch and die, with the thicker piece next the punch, and the thinner one next the die, and then, by pressure applied to the punch, forcing a portion of the thicker plate through the thinner one.

IMPROVEMENT IN MANUFACTURING PIGMENTS FROM IRON ORE. JOSEPH H. DAVIS, of Morristown, N. J. Dated, August 8, 1854.—Take pulverized hematite, or oxide of iron, place it in a reverberatory furnace or cylinder, heat it to about 1000 degrees Fahrenheit, and then introduce steam from about the same quantity of water as ore is used. The steam is decomposed, and, in proportion to the time in which the ore is exposed to the steam, different colors can be produced, from that of the yellow ochre to black.

METHOD OF COATING IRON WITH BRASS OR COPPER. HUGH BYRGESS, of Kentish Town, England. Patented in England, Feb. 17, 1853; in the United States, July, 1854.—The articles to be coated with copper, or alloys of copper, are to be first well cleaned in dilute sulphuric acid, as is well understood; they are then to be carefully washed in a dilute solution of chloride of zinc. The strength of the solution is made by adding about five parts of water to a saturated solution of the chloride, formed by dissolving zinc in hydrochloric acid, till action has ceased. Also the other soluble salts of zinc and tin may be used, and oxide of zinc deposited on the article to be coated, by holding it in the fumes of zinc during combustion. Oxides of zinc, made into a very thin cream with water, and applied to the iron article, carbonates of zinc treated in the same way, are all applicable for the process herein described, or, in place of zinc, cadmium may be used in like manner. The article, after having been well dried, when any of the above solutions have been used, may be heated to about 250 degrees, and may be plunged into melted copper.

A mixture of about two per cent. of zinc and one per cent. of tin to ninety-seven parts of copper, answers the purpose better than copper alone.

"I claim the coating of iron sheets, bars, bolts, and other forms of iron with copper or brass, by a combination of processes as follows: by first cleaning, then coating them over with a solution of cadmium or zinc, drying and dipping them into a bath of melted copper or brass, and raising them out of the bath into an atmosphere of steam and carbonic acid, flowing in streams or in jets, substantially in the manner described."

IMPROVEMENT IN RADIATORS. JOHN GEMMILL, of Mercer, Pa. Dated, August 8, 1854.—This invention is designed to prevent the great loss of heat which is occasioned by the ordinary construction of stove-pipes, in consequence of the passage of the current through the pipe, in obedience to the known laws of heat, without producing the amount of radiation which a more favorable construction would afford; it consists in placing upon the stove, in the situation usually occupied by the first two joints of pipe, a radiator of the form of two frustrums of cones joined at their bases, and in suspending within this case a deflector and regulator, consisting of an inverted cone and right frustrums, united at their bases, said deflector and regulator being lined with some non-conducting substance, and movable vertically.

IMPROVEMENT IN AIR-HEATING STOVES. NATHANIEL A. BOYNTON, of New-York, N. Y. Dated, August 8, 1854.—The fire-chamber is spherical, so formed as to cause the blaze and heat to be thrown off from the wood burned therein at the sides, and thus to radiate the heat at the outside of the fire-chamber, and next to the body of air surrounding it. By forming the fire-chamber in one piece, all leakage of gas is avoided, and the construction greatly simplified, while, from its form, great facility is given for unequal expansion and contraction, without injury.

IMPROVED TIRES FOR CARRIAGE-WHEELS. GEORGE SOUTHER, of South Boston, Mass. Dated, August 1, 1854.—This invention consists in applying elastic tires to carriage-wheels. The tire of the wheel is made with two projecting flanges all around, having a space between them for the elastic tire. An entire ring of vulcanized rubber is then stretched over the tire. For a pleasure buggy, make the tire of wrought iron $1\frac{1}{4}$ inch wide, the flanges $\frac{4}{10}$ inch deep inside, and $\frac{3}{10}$ inch outside; the space between the two flanges is about 1 inch, and the elastic strip is 1 inch wide and $\frac{1}{4}$ thick.

IRRESISTIBLE HORSE-BIT.—A patent has just been issued to Messrs. Titus & Fenwick, of Brooklyn, N. Y., for a very ingenious and useful contrivance for stopping runaway horses, and placing the most fractious and powerful horse under the immediate control of all classes of riders and drivers, even to the most delicate female.

The nature of the invention consists in closing a horse's nostrils, so as to check respiration, and bring him to a stand-still, by means of pressure applied through ornamental, padded levers, attached to the ends of the bit-bar, and so arranged on the sides of the horse's nose, and attached to a rein, that, when the driver or rider pulls hard upon the rein, they are caused to move laterally toward each other like the jaws of a clamp, and close the horse's nostrils sufficiently to stop his breathing, and bring him to a stand-still. As soon as the driver lets the rein slack, the pads fly off, and allow the horse to breathe freely.

This bit is intended to take the place of the ordinary kind, and presents a handsome appearance when on the horse.

IMPROVED ARRANGEMENT FOR LATHE CHUCK. L. A. DOLE, of Salem, Ohio. Dated, July 25, 1854.—The first part of this invention relates to the means employed for making the hole which passes through the hub, perfectly true, and the second part relates to the means employed for forming the shoulders in the same, after the central bore has been made true.

This invention consists in the employment of a self-centreing lathe chuck, consisting of a scroll screw and sliding holding jaws, in combination with a mandrel or screw passing through its centre, and having a cutter secured to its extremity, for the purpose of boring hubs perfectly true, said screw being fed, while boring, by a female nut attached to the barrel through which the screw or mandrel works. And, also, it consists in so constructing and arranging the feed nut, and combining it with a guage plate arranged on the mandrel, that it will be caused to adjust itself at the moment the shoulder of the hub has been cut of the required depth, and then be capable of turning with the screw, and allowing the cutter to square off the shoulder.

IMPROVEMENTS IN COMPOSITIONS FOR BLEACHING AND STUFFING LEATHER. —A patent has been granted to L. Woodbury Fiske, of Louisville, Ky., for improvements in bleaching and stuffing leather. This improvement includes two modes of bleaching, warm and cold. A large per cent. is saved in cost for producing, while the weight and fairness is enhanced. By chemical means an increased amount of "stuffing" is applied, and the surface coating of tallow that remains after drying, which by the old mode is "set off," is entirely forced into the body of the hide or skin, leaving the grain fibres free from "stuffing," which impairs the color, and the leather is produced with increased fairness and pliability.

IMPROVEMENT IN WORKING LIMING VATS IN TANNERIES.—A second patent has also been granted to Mr. Fiske, for improvements in tanning. The object of this improvement is to render the process of "liming," as now generally practised by tanners, as well as Mr. Fiske's own unhairing soak, more rapid, efficacious, and economical, to cause the hides and skins to come from the vats more "plump," fair, and free from lime in the pores than has been the case hitherto, at the same time preventing the formation of the pellicle on the surface of the liquid in the vats, the deposite of carbonate of lime and consequent loss of strength, and the labor and expense of frequent changes in lime thereby induced.

IMPROVEMENTS IN FIRE-ARMS. JOSEPH C. DAY, of Hackettstown, N. J. Dated, August 8, 1854.—This invention relates, firstly, to a certain method of constructing the barrel, and connecting it with the stock and breech, for the purpose of allowing it to swing, and present the rear end of the bore for the reception of the charge; secondly, to certain means of making a secure and perfect connection between the rear of the chamber and a fixed breech; thirdly, to a certain arrangement whereby the caps are caused to be supplied from a magazine in the stock to the nipple as required, by the movements of the hammer in cocking and discharging the piece.

IMPROVEMENT IN SOFA BEDSTEADS. STANISLAS MILLET, of New-York, N. Y. Dated, August 8, 1854.—Mr. Millet claims, in combination with a spring-bottom, such as represented, the attaching of the sagging-bottom to the hinged head and foot-board, so that said sagging-bottom shall be strained over the spring-bottom, when the head and foot-pieces are dropped to form a bed, and serve the purpose of a lining between the mattress and the springs, when used as a sofa or lounge, substantially as described.

IMPROVEMENT IN RAILROAD CAR WINDOWS. GEORGE SPENCER, of Utica, N. Y. Dated, August 15, 1854.—This invention consists in combining with the side of a car, a revolving window, formed of two separate circular sashes, connected by hinges, so that one sash may be opened to its full extent, and having a small part of the circle cut off, so that, by revolving it upon its centre, a small opening may be made at the forward part of the window, whichever way the car may be moving, the residue of the window remaining at the same time covered.

NEW ENGLISH PATENTS.

ORNAMENTATION OF POTTERY AND GLASS. MESSRS. BALE & LUCAS, Staffordshire. *Patent dated Nov.* 1, 1853.—This invention relates partly to the production of various ornamental effects and patterns upon the surfaces of articles made of pottery, glass, slate, etc., especially those made of brick, tile, slabs, etc., of pottery, glass, enamelled and glazed iron, etc., and also to other architectural fittings. The improvements are applied in that part of the pottery manufacture known as "ground-laying." Another part of the invention relates to the imitating of marbled and partly colored work upon the materials above named, and also to printing ornamental patterns upon stone, slate, marble, etc. The new processes, so far as relate to the ground-laying, will be better understood by a short description of the modes at present generally employed in the manufacture. The outline of the intended pattern is first drawn on and pricked through tissue-paper, through which fine charcoal is rubbed or pounced upon the ware, leaving thereon a black outline. The parts intended to be white, or different from the ground, are then penciled in with a composition or "water stencil," made of rose-pink, sugar, and water. After this the piece is oiled and bossed with a dabber, to lay the oil on evenly. Upon this the required color, ground very fine, is dusted. After being dried, the piece is well washed in clear water. The stencil, being soluble, comes off, and the color is left on, forming the pattern. It is then cleaned, dried, and fired in the kiln. A variation in forming the outline is often used, by printing it instead of tracing or pouncing in, and transferring such printed

outline to the surface of the article, in the usual way of pottery transferring. In such case the outline is fired, after which the stenciling, oiling, grounding, etc., are repeated as before. In all cases, however, the outline only of the pattern is made merely to guide the stenciling, and in these processes every fresh coat of color requires a re-stenciling and repetition of the process.

The improved modes of ground-laying, or what may, by way of distinction, be termed "printed stencil ground-laying," consist of fully engraving the entire pattern, in place of engraving the outline only of the pattern on the copper. The brick or other article to be ornamented is sized with a mixture of Canada balsam and turpentine. An impression from the engraved plate is then taken in the usual way upon tissue-paper, the composition or stencil used being particularly adapted for printing purposes. It consists of about three parts of rose-pink, two parts of whiting, two parts of fine-ground flint, one part of lamp-black, one half part of sugar-of-lead, and two parts of resin, well mixed with printers' oil. The impression is then transferred to the sized surface in the ordinary way of potters' transferring. After remaining a short time, it is washed with soft soap and potash, to bring away the superfluous paper and size. In order to receive the ground, it is then oiled with Canada balsam and linseed oil, but without the usual bossing, after which the ground color is brushed, dusted, or laid on in any convenient manner. It is now ready to be fired with the "stencil on," which is loosened by the heat, and, on coming out of the kiln, the stencil is readily rubbed off with fine sand and water, leaving the color and pattern on the article, beautifully sharp and defined, and clean at the edges. Another part of the invention is the converse of the above, and is specially adapted for fine, delicate work. The entire pattern is engraved as before, and the brick or other article to be ornamented is then oiled over with Canada balsam and linseed oil, and is dusted over with the color which is intended as the ground. An impression in stencil is then taken on tissue-paper from the engraved plate, and is transferred to the moist surface of the article prepared as above. The printed stencil is then carefully peeled off, and brings away with it the color from all the parts of the article with which the printed stencil has come in contact, the other portions not touched by the print forming the pattern.

When gilding is required, ground gold is dusted on instead of the ordinary color. The pattern is then printed as before in stencil, and transferred to the surface of the article upon the gold; after which the article is washed with soft soap and potash, in order to bring away the superfluous gold and the oil from those parts not desired to be gilt. The article is then fired with the stencil on, which on coming out of the kiln is rubbed off, and leaves the gilt pattern under it firmly adhering to the ware.

The great feature of difference between the old and new modes is, that instead of having to draw the outline, and to pencil and stencil in by hand, the pattern is "printed" complete in stencil. The advantages gained are not only the obtainment of more beautiful work of any breadth or fineness, (which is done at a cheaper rate than the modes at present in use,) but delicate elaborate patterns, at present entirely unable to be attained, are easy and economical of execution. In addition, there are many other advantages, such as saving the cost and firing of the outline; doing away with its ragged edges; the trouble of bossing after oiling; the cost of cleaning and picking out the pattern; after washing off, being able to lay on as much color at one coat as required two and three applications in the old modes, and re-stenciling; and lastly, in being able to gild at the same time at a reduced cost.

In carrying out the invention upon articles where heat is not required, and

upon other substances, as stone, slate, wood, etc., which will only bear a slight temperature, some slight deviations will be necessary from the processes above described; and in ornamenting glass or other transparent substances, the process found most expedient is this: The pattern is engraved as before, and an impression is printed in black or any opaque color, and transferred generally to the back of the piece. The paper is then washed off, after which it is oiled to receive the ground color, which is brushed or dusted through perforated paper or oiled silk, or any other suitable medium. The piece is then sized with a solution of isinglass and water, and, whilst wet, gold-leaf is applied, and is seen through on the front side where there is no color. It is then finished by painting it over with any desired color. When applied to walls, floors, or anywhere which is likely to be damp, a coating of gutta percha or other water-proof substance is applied to protect it. By this means most beautiful effects can be produced for walls and floors; especially as landscapes, fruit, figures, and gilding can be represented, and saved from injury and wear by being done at the back.

In ornamenting opaque bodies not necessary to be fired, this last process is slightly varied. The piece is first sized with isinglass and water, and the gold applied as before; it is then dried a little and varnished, and afterward hardened to set the varnish; the print is then transferred to it, and the paper washed off, after which it is oiled and the color applied as before, and the whole is afterward varnished. Another simple mode of ornamentation adapted for chimney-pieces, pillars, etc., of stone, slate, wood, etc., is as follows: The article having been first cleaned and dressed, is painted over with the desired color; an impression is taken from an engraved plate of the pattern desired, in any ordinary way of printing, and transferred to the surface of the article to be ornamented. The paper is afterward washed off, leaving the pattern, as marble, etc., behind, which may afterward be varnished so as to keep it clean.

It will be evident, that the several modes described are admirably adapted, not only for general architectural purposes, as bricks, tiles, slabs, baths, chimney-pieces, doors, furniture, etc., but are capable of being applied to a variety of useful fittings, as tables, panels, pilasters, mouldings, ceilings, etc., either made of the materials themselves, or forming a species of inlaying and veneering. Bricks, blocks, pillars, and similar articles, too heavy and costly to be made entirely of glass, may be beautifully decorated by ornamenting the glass in the manner described, and then using it as a veneer.

Preservation of Iron by Stanno-Plumbating.—The *Rev. N. Callan*, of Maynooth College, the author of numerous improvements in practical science, has suggested and is now introducing a most important system of preserving iron from corrosion and general decay. He uses an alloy of tin and lead, or tin, lead, zinc, and antimony, recommending that the alloy should contain at least as much lead as tin, but not more than 7 or 8 parts of lead to 1 of tin. The iron is treated with such a composition, just as iron is usually coated with tin. In a series of experiments on the decomposition of water by the galvanic battery, the patentee found that concentrated nitric acid acted far more powerfully on lead than on iron coated with an alloy of lead and tin, in which the quantity of lead varied from 3 or 4 to 7 or 8 times the quantity of tin; and that the greater the proportion of lead contained in the alloy, the less it was acted on by nitric acid. He afterward made a variety of experiments in order to compare the action of strong nitric, sulphuric, and muriatic acid, as well as of diluted sulphuric and muriatic acid, on lead

and galvanized iron, with their action on iron coated with an alloy of lead and tin, in which the quantity of lead was about equal to, or from two to seven or eight times as great as that of tin; and from these experiments he concluded that iron coated with any of these alloys is far less oxidable and less liable to corrosion than lead, and infinitely less so than galvanized iron, the zinc coating of which is rapidly dissolved by the acids, even when they are greatly diluted with water. Hence, iron coated with an alloy of lead and tin, in which the proportion of tin is small, will answer for all the purposes for which sheet-lead, leaden pipes, and galvanized iron are employed. The mixture of a small quantity of zinc with the alloy of lead and tin, with which iron is coated, hardens the coating, but diminishes its power of resisting corrosion. However, a coating of lead, tin, and zinc is far less oxidable than the zinc coating of galvanized iron. The addition of a little antimony, which is a cheap metal, hardens the coating, and increases its power of resisting oxidation and corrosion. Stanno-plumbated iron may answer better than galvanized iron for the rope of iron wire by which the conducting wire of the submarine telegraph is protected, because the former will resist the corrosive action of the sea-water better than the latter. In a work published last year, Pouillet, lately professor in the Sorbonne, says that sea-water corrodes galvanized iron. In his interesting little book on the electric telegraph, Mr. Highton states that he saw, in the neighborhood of large towns, galvanized iron wires, an eighth of an inch thick, reduced, in less than two years, to the thickness of a sewing needle, by the sulphurous vapors arising from the coals consumed. It is very probable that these vapors would exert no action on stanno-plumbated iron. Stanno-plumbated iron is far preferable to lead, because it is much cheaper, much more durable, and much less affected by changes of temperature. It has also great advantages over galvanized iron. It may be employed for all purposes for which the latter is used; it is much more easily worked and repaired, because it is far more easily soldered; and it will answer for a great variety of uses, in which it may be exposed to the action of various corroding substances, such as acids, etc.; but for these uses galvanized iron is totally unfit, because the zinc coating is incapable of resisting the action of any acid. Stanno-plumbated iron, particularly if the coating contains a small quantity of antimony, will probably answer better than lead for vitriol chambers. It may sometimes be used instead of copper for the sheathing of ships, and bolts and nails of coated iron may be sometimes employed instead of copper bolts and nails. It may also be used for some of the purposes for which enamelled iron is employed, such as the enamelled cast-iron cisterns and pipes used in water-closets. At the last meeting of the British Association at Hull, Dr. Gladstone stated that owners of iron-built ships object to sugar cargoes, because the saccharine juices that exude from the casks corrode the metal. If the iron of which the ships are made were coated on the inside with an alloy of lead and tin, containing five or six times as much lead as tin, it is highly probable that the corrosion of the ships would be prevented. A small piece of an alloy of lead and tin, in which the quantity of lead was about five times as great as that of tin, was left in sugar dissolved in water for more than three months. After that period the alloy came out as bright as when it was put into the solution. Coating the iron on the outside would protect it against the action of the sea-water; and would be particularly useful for vessels intended for the West-India islands, where, it is said, the sea-water soon corrodes the iron. Stanno-plumbated iron is not more expensive than galvanized iron. First, because the coating of lead and tin need not be half as thick as the zinc coating, and therefore the quantity

of the alloy used in coating a given surface of iron will be far less than the quantity of zinc employed in galvanizing the same surface. Secondly, because spelter is very volatile, and therefore the waste of zinc in a molten state is much greater than that of the alloy of lead and tin. Thirdly, a greater degree of heat is required to keep zinc in a state of fusion, than to melt lead and tin. Lastly, since the proportion of tin need not be more than the seventh or eighth of that of lead, the alloy is very little dearer than zinc. From these reasons, it is clear that stanno-plumbated iron must be at least as cheap as galvanized iron.

Professor Airey's Pendulum Test of the Earth's Mass.—The following letter from Professor Airey to Mr. James Mather, of South Shields, enters somewhat into the details of the pendulum experiment in the Harton Colliery, on which we wrote last month: "It will be, I am sure, a matter of satisfaction to you to know, that the results of the computations of the pendulum vibrations gives the highest confidence in the certainty of the results to be deduced from them. The comparison of the rates of the pendulum, before and after their interchanges, shows that there is no evidence of their having undergone any mechanical change whatever, and almost positive evidence against their having undergone any change, amounting in its effects on their vibrations to 1·20th part of a vibration in a day. The immediate result of the computations is this. Supposing that a clock was adjusted to go true time at the top of the mine, it would gain 2¼ seconds per day at the bottom. Or it may be stated thus—that gravity is greater at the bottom of the mine than at the top by 1·19190 part. To go a little further into the interpretation. If there had been no coal measure, or rocks of any kind, between the top and the bottom, but merely an imaginary stand to support the pendulums, the gravity at the top would have been less than at the bottom by 1·8400 part nearly. But it is less by only 1·19200 part. And what is the cause of this difference? It is the attraction of the shell of matter, the thickness of which is included between the top and the bottom of the mine. The attraction of that shell, therefore, is the difference between the two numbers which I have given, or is 1·14900 part of gravity nearly. But if that shell had been as dense as the earth generally, its attraction would have been 1·5600 part of the gravity nearly. Therefore, the earth generally is more dense in the proportion of 149 to 56, nearly. You will remark that all these numbers are rough, and that to make their results available some small corrections are required (to which I have not alluded,) and some knowledge of the density of the different beds, &c., which I do not possess at present."

Manufacture of Caoutchouc. J. H. Johnson, London and Glasgow. —This French invention, which has been patented in England on behalf of MM. Guibal & Cumenge, relates to the recovery and utilization of the volatile ingredients used in dissolving caoutchouc in the process of manufacturing it, instead of allowing these ingredients to be lost by evaporation. This great saving is effected by placing the soft caoutchouc upon traversing cloths in closed chambers, provided at the top with a means of condensing the vapors, and carrying off the products, the material being heated by suitable apparatus beneath the traversing cloth. The caoutchouc, as it leaves the spreading rollers, is traversed over a horizontal table, consisting of upper and lower cast-iron plates, with an intervening place for the introduction of steam, hot water, or heated air. This table is covered in by a roofing of metal plates, set at convenient angles, the chamber being closed in at each end by triangular

metal plates, placed vertically. The roof is covered with felt, which is kept constantly saturated with cold water, supplied by a duct above, and which is again collected by gutters running along the lower edges of the roof-plates. The vapor rising from the material is condensed upon the under sides of the roof-plates, and, trickling down, is collected in suitable gutters; these gutters being carried completely round the chamber, and across the end-plates, so as to prevent any of the products of condensation from falling upon the caoutchouc beneath. The gutters communicate with suitable receptacles, into which the condensed matter passes; and this matter can be used over again repeatedly in the manufacture of the caoutchuc, thereby considerably reducing the cost.

MISCELLANY.

A Puzzled Pig.—One of our western farmers, being very much annoyed last summer by his best sow breaking into the corn-field, search was instituted in vain for a hole in the rail fence. Failing to find any, an attempt was next made to drive out the animal by the same way of her entrance; but of course without success. The owner then resolved to watch her proceedings; and posting himself at night in a fence-corner, he saw her enter at one end of a hollow log, outside the field, and emerge at the other end, within the enclosure. "*Eureka*," cried he, "I have you now, old lady!" Accordingly, he proceeded, after turning her out once more, to so arrange the log (it being very crooked) that both ends opened on the outside of the field. The next day the animal was observed to enter at her accustomed place, and shortly emerge again. "Her astonishment," says our informant, "at finding herself in the same field whence she had started, is too ludicrous to be described! She looked this way and then that, grunted her dissatisfaction, and finally returned to the original starting place; and, after a deliberate survey of matters, to satisfy herself that it was all right, she again entered the log. On emerging once more on the wrong side, she evinced even more surprise than before, and, turning about, retraced the log in an opposite direction. Finding this effort likewise in vain, after looking long and attentively at the position of things, with a short, angry grunt of disappointment, and perhaps fear, she turned short round, and started off on a brisk run; nor could either coaxing or driving ever after induce her to visit that part of the field." She seemed to have a "superstition" concerning the spot.—*Knickerbocker.*

Fire-flies.—In tropical climes, various luminous insects are attached to female head-dresses. They are used also as lamps. I have read fine print in a dark room by the light of two small Long Island fire-flies in a tumbler. But man was not the first to rob these living gems of their liberty and radiance. There are birds that seize and suspend them as chandeliers for their dwellings. The bottle-nested sparrow, or baya, is one of the kidnappers. Its nest is closely woven like cloth in the figure of a large, inverted bottle, with the entrance at the orifice of the neck. The interior is divided by partitions into two or three chambers, one over the other. These are profoundly dark until lit up with fire-flies caught alive, and mercilessly fixed to the walls or ceiling with pieces of wet clay or cow-dung for sconces.—*From "The World a Workshop."*

BENEFIT OF RAILROADS TO FARMERS.—We find in the report of the Michigan Central Railroad for 1853, the following list of farm products carried upon that road last year:

Apples, bbls.	25,912	Grass and Clover Seed, tons,	394
Barley, bush.	24,426	Salt, bbls.	13,936
Beans, bush.	1,064	Wool, tons,	593
Bran, etc., tons,	1,090	Cattle, alive,	4,012
Beef, bbls.	6,872	Garden roots, tons,	1,045
Butter, tons,	206	Hams, etc., tons,	323
Pork, bbls.	11,673	Hides, tons,	224
Pork, in hhds, tons,	2,104	Oats, bush.	115,295
Wheat, bush.	807,707	Plaster, tons,	2,613
Corn, bush.	260,931	Pelts, etc., tons,	212
Cheese, tons,	146	Horses,	584
Cranberries, bbls.	1,036	Sheep,	12,432
Dried fruit, tons,	339	Lumber, feet,	12,377,534
Flour, bbls.	416,863		

At a rough estimate, this would make upwards of 80,000 such loads as a common road wagon in Michigan usually takes to market, drawn by two horses, at an average, going and coming, of twenty-five miles a day, and would probably average six days for each load; say four hundred and eighty thousand days, or the labor of one thousand three hundred and fifteen men and teams every day for one year, to say nothing of back loads and transportation of live stock.—*Louisville Journal.*

BENDING SHIP TIMBER.—All the immense labor hitherto spent in rounding timber to suit ships, and houses, and machines, and furniture, and whatever other things require timber so curved, is now to be dispensed with by machines which can take the stateliest and straightest oak, and bend it like a Titan-bow, for the use of the proudest man-of-war, or the loftiest cathedral, and this, too, adding strength and durability to the wood! The first experiment has just been made on timbers sixteen feet in length, eight inches by ten, bent to as short a curve as can be used in ship-building. This machine is a large one, designed for ship timber, but there is another also ready for furniture, and both have just commenced operations. The place of action is Greenpoint, where there is a large foundry for making the machines, and large steam-vessels for steaming the timber, with other requirements included in the process. Henceforward all the delicate curves of steamers, frigates, or yachts, will be of solid timber, fashioned by this extraordinary innovation. So, too, the most ponderous rafters, such as bend in lofty arabesques over chapel or hall, may be composed of unbroken trees of the forest, yielding under this new and wonderful power of man. So, too, all the curvilinear beauties may be detailed by the same means. The statistics of the value of such a discovery are beyond the conception of the uninitiated. All the immense shipping and building interests of the civilized world are included in this discovery.—*N. Y. Tribune.*

AGRICULTURE IN FRANCE.—A letter writer for the *Republic* says: "A trip of six hundred and fifty miles, from the northern to the southern extremity of France, justifies me in the expression of my opinion that sun does not shed its rays on so fair a land, or one so thoroughly cultivated. The whole country is literally a garden. Every square foot, from the mountain-top to the lowest ravine, is made to produce something, if it be susceptible

of it. Their mode of planting or sowing their crops, whether on plain or hill-side, produces the finest effect on the appearance of the landscape. The place allotted for each crop is laid out in squares, or parallelograms, with mathematical precision, and, whether large or small, the best garden could not be divided with greater accuracy. As there are no fences or hedges, and as the different crops are in various stages of maturity, you can imagine the variety of hues that meet the eye, and the magnificence of the panorama that stretches out in every direction as far as the vision can penetrate. I am sorry to add in this connection that seven-eighths of the agricultural labor is performed by females, while two or three hundred thousand stalwart men in uniform are idling away their time in the barracks of the cities and villages. In the absence of fences, cattle, secured by ropes, are driven about their pasturage by females; and sheep are confined within the required limits by boys, assisted by a shepherd's dog."

Premium Pianos.—We see by the official report of the late Fair of the Metropolitan Mechanics' Institute, held in Washington, that Messrs. Steinway & Sons were awarded the highest premium for their Semi-grand Piano, (which is, indeed, a perfect grand, in a square form,) and, also, the first premium for a 7¼ octave circular scale piano.

These instruments attracted much attention at the Fair, and public sentiment seemed to be in advance of the committee in awarding the premiums. And so universally were they liked, that Mr. S. sold not only those on exhibition, but received orders for several others. They are unsurpassed for strength, delicacy of touch, power, and sweetness of tone.

Opening of the Panama Railroad.—This gratifying event took place on the 20th ult., and the celebration was participated in by a large party of officers, stockholders, and invited guests, who were received with great demonstrations of rejoicing at Aspinwall, Panama, and the intermediate points. The transit was made in four and a half hours, and the management of the road and machinery gave abundant satisfaction. Henceforth, the tedious, expensive, and laborious passage of the isthmus, between the two oceans, which occupied days, will now be accomplished in a few hours.

Prince Barnum.—Phineas T. Barnum is surely the greatest man out. He has stuffed with soap, or other soft material, or covered with wool, (perhaps from the woolly horse,) the eyes of several ladies of this city, who are announced to act as a committee on babies, at the Museum, on some future day. Surely it must require the exercise of some power which few men possess to induce ladies so far to forget what is due their sex as to occupy such a position.

A New Anœsthetic Agent.—Professor Dugas, in the Medical College of Georgia, a few days since, had to extirpate a large tumor on the back weighing about ten pounds. He surrounded the base of the tumor with the freezing mixture for four or five minutes, which so obtunded the sensibility of the parts that the operation was performed with comparatively little pain.

Fruit Trees.—It is a theory among fruit growers that the peach is destroyed by cold, when the thermometer reaches 10 degrees below zero, and that this tree cannot live when the temperature is at that point; but an examination of the trees, in the western part of this state, fails to show that any injury has yet been received.—*Rochester Adv.*

PROGRESS IN ARKANSAS.—The State of Arkansas has just completed a census of the State for 1854. The following is the result as compared with 1850:

	1824.	1850.
Population,	253,117	209,887
Whites,	119,224	162,189
Slaves,	60,279	47,100
Free colored,	614	608
Acres land cultivated,	857,180	781,530
Bales of cotton produced,	160,779	65,344
Corn, bushels, 1853,	11,536,969	8,893,939
Wheat, do.	332,535	199,639
Oats, do.	1,040,506	656,283

It appears from this that the increase was as follows, viz:

Increase of population,	21
Increase of whites,	20
Increase of slaves,	27
Increase of lands cultivated,	10
Increase of cotton produced,	150
Increase of wheat produced,	130
Increase of oats produced,	50
Increase of corn produced,	50

MANUFACTURE OF NEEDLES.—The number of processes through which a needle goes in its manufacture is as follows: 1, wire received; 2, weighed; 3, gauged; 4, cut; 5, rubbed; 6, counted; 7, pointed; 8, washed; 9, cut back; 10, pointed at the other end; 11, examined; 12, counted; 13, washed; 14, weighed; 15, annealed; 16, stamped; 17, pressed; 18, spitted; 19, piled; 20, broken; 21, heads piled; 22, oil burnt off; 23, soft-straightened; 24, evened; 25, counted; 26, hardened; 27, evened; 28, stropped; 29, tempered; 30, weighed; 31, examined; 32, picked for crooks; 33, hard-straightened; 34, counted; 35, scoured with seven emeries, washed and evened between each; 36, washed and dried; 37, weighed; 38, evened; 39, headed; 40, weighed; 41, ground at the point; 42, weighed; 43, scoured with one emery, and glazed; 44, weighed; 45, washed and dried; 46, weighed; 47, evened; 48, headed; 49, picked for waste set; 50, weighed by count; 51, set; 52, examined; 53, weighed for drillers; 54, blued; 55, drilled; 56, rubbed; 57, weighed from drilling; 58, examined; 59, rounded by finishing; 60, finished once; 61, rubbed; 62, finished again; 63, rubbed; 64, examined; 65, counted in 25's; 66, papered; 67, labelled; 68, tied up; 69, collected; 70, packed up.

WARM FEED.—A correspondent of the *N. E. Farmer* gives the following fact relative to the management of one of his cows, and its result: "I will give your readers my mode of feeding one of my cows. I purchased her last November, when she gave four quarts of milk a day. I commenced feeding her with cut hay, two quarts of shorts, and a few carrots, wet with cold water, twice a day for one month. At the end of that time she had not increased in her milk at all. I then commenced wetting the same amount of feed with boiling water, and, at the end of the second month, she gave regularly *six* quarts per day, which I thought a fair gain. Where a person needs considerable milk, and keeps but one cow, I would recommend a trial of this mode of feeding."

A SINGLE pound of flaxen thread, intended for the finest specimens of French lace, is valued at six hundred dollars, and the length of the thread is about two hundred and twenty-six miles. One pound of this thread is more valuable than two pounds of gold.

THE LAWTON BLACKBERRY.—We have had many enquiries in regard to this fine fruit, a full description of which was given in our October number, p. 210. We have asked the opinion of many of our friends who fruited it last year, and, without exception, they speak of it as well deserving the encomiums given it. J. B. Lawton's office is at 54 Wall street, N. Y.

LEWIS HOUSE, BINGHAMTON, N. Y.—Some of our friends have found a temporary home in this well known hotel, now kept by Messrs. Davis & Morris, and report it as a very pleasant, and, in all respects, satisfactory place for the traveler. It is only a minute's time from the depot, with a good walk, the whole distance. Patronize the deserving.

☞ WE commend the experiments of Prof. Campbell, p. 590, to the attention of all agriculturists.

GENERAL AGENCY.—The publisher of *The Plough, the Loom, and the Anvil*, believing it in his power to be of essential service to the readers of that journal, in the purchase or sale of various articles, and the transaction of various kinds of business, would announce to them that he is ready to execute any such commission which he may receive, including the purchase of books of any description; implements connected with agricultural, manufacturing, or mechanical operations; artificial manures; farm and garden seeds, etc., etc. One of the gentlemen connected with the journal is a proficient in music, and experienced in the selection of piano-fortes, flutes, etc., and will execute orders in that department.

He will also act as agent in the purchase and sale of Real Estate.

☞ Particular attention to business connected with the Patent-Office.

Letters of inquiry on these matters will be promptly attended to.

SCHOOL-TEACHERS. — Having had occasion to furnish teachers for some of our Southern friends, we have been fortunate enough to learn of several young ladies who are admirably well qualified for families or schools, and if any are in need of such, a letter addressed to us will receive immediate answer. We shall not fear to guarantee that any reasonable expectations will be fully met. Some of them are desirous of going South.

NEW BOOKS.

HARPER'S GAZETTEER OF THE WORLD.

All the numbers of this ponderous work are now published, and taken together they embody a vast deal of information in a very small compass. Large and well-drawn maps also illustrate the text. The whole execution of the work is in excellent style. It is impossible that perfect accuracy should be attained in all these descriptions. The longer articles exhibit evidence of great care and extensive research. Under some of the minor titles we have detected a few errors that are worthy of correction, on the part of purchasers as well as future publishers. The following now occur to us:

Windham, Essex County, Mass. There is no such town, nor never was.

Rowley, Essex County, Mass., does not contain any academy.

Dummer Academy, in Newbury, parish of Byfield, is less than half a mile from the northern boundary.

Woodstock, Windsor County, Vt., does not contain any academy, but an excellent public school. Nor does it lie "on" nor within less than eight miles of "the Ver-

mont Central Railroad." Windsor, in same county, contains a large gun factory, omitted in the description, the business of which is worth more to the town than all the mills actually mentioned. Nor is Windsor a "capital" of the county, unless a single session, annually, of the circuit court of the United States makes it such, while all the county buildings and county office are at Woodstock.

In Newburyport, Essex County, Mass., there is a monument erected in a church to the memory of Whitefield, some twenty feet from the pulpit, while the bones of the venerable man lie in a tomb under the pulpit. Such would not be the idea from the language used by the compiler. The church is the First Presbyterian, in Federal street.

COMPENDIUM OF HYGIENE; compiled for the use of the Winsted Hygienic Association. By LUCIUS MILLS, Physician to the Association. West Winsted, Conn. 1855. For sale by Fowlers & Wells.

We have here a small manual, 190 pages, designed more for the nurse than the physician; and the author wisely, we think, recommends the substitution of the former for the latter, in many cases where hitherto the *doctor* is sent for. At least, he thinks this preferable, unless the physician is in reality a skillful man. We must confess that we have seen and known too much of medical students to look upon the large majority of them otherwise than with entire contempt, while the few we honor as among the most deserving and the most useful of men. A skillful physician and a good man, in one person, has our heartiest sympathies and our profound respect.

This manual instructs us wisely, no doubt, in the proper use of food, diet, bathing, exercise, &c., as a proper substitute, often, for medicine, in many of the diseases to which we are exposed, and also gives directions for the treatment of wounds, poisons, &c. The author is a rational hydropathist. He is not inclined to drench us to death in attempting to cure every disease by the one process, but commends the use of different baths in a variety of cases. Recipes for gruel, farina, sago, rice, &c., &c., for the sick room, are also inserted. An "Addendum" directs us fully and judiciously, we think, in the cure of dyspepsia, by the "motorpathic" treatment. This is in a separate pamplet. We have no doubt the author has done his community and others a very good service in these pages.

BOTANY OF THE SOUTHERN STATES. In two parts, &c. By PROF. JOHN DARBY, A.M. New-York: A. S. Barnes & Co.; Cincinnati, W. H. Derby; Savannah, John M. Cooper. 1855. 12mo. 612 pages.

We have examined this volume with much satisfaction. It is well arranged; the topics are well treated, and it is throughout what it should be. The former part of the volume (164 pages) is occupied with the elements of the science, and physiology; this is followed by the Linnean system and the "Dichotomous Analysis;" and then comes, commencing page 200, Descriptive Botany. A Glossary, and Indices finish the volume. If we must find fault with any thing, it must be the phrase, "Dichotomous Analysis," as a new word and unnecessary, though expressive. The term used by Wood, for the same thing, is "Synopsis of the Natural System." This is the fact. It is also "dichotomous;" since, we ever have a choice between two dissimilars till we are brought to the natural order. We commended Wood very highly, as vastly superior to any thing before published. He must now divide the honors with Mr. Darby. This last book is to the South what Wood professes to be for the whole. How full Mr. Wood is in the Southern Flora, we have had no means of ascertaining. He is full for northern latitudes. Mr. Darby describes the Flora from lat. 30° to 35°, "including South Carolina, Georgia, Alabama, parts of North Carolina, Florida and Mississippi." The book is eminently worthy of extensive patronage throughout.

MESSRS. LONG & BROTHER, Publishers, 121 Nassau street, New-York, have in press, an Autobiography of an Orphan Girl. By ALICE GREY. A tale of real life, whose characters still play their part on the world's stage.

THE SLAVE OF THE LAMP. By MRS. NORTH, a well-known author; and THE WATCHMAN, illustrated by living characters—more anon. Price, $1 each.

THE GARDENER'S TEXT BOOK, containing practical directions for the formation and management of the kitchen garden, and for the culture and domestic use of its vegetables, fruits, and medicinal herbs. By PETER ADAM SCHENCK, formerly gardener to Edward C. Williams, Esq. Boston: John P. Jewett & Co.; Cleveland, Jewett, Proctor & Worthington. 4th 1000.

We have before commended this work. It gives us full instructions in the location, arrangements, and cultivation of the garden; and the tools adapted to such service as is required, and the mode of using them. The proper culture and use of the various roots, medical herbs and other vegetables is fully set forth. The whole can not fail to be highly useful.

KATE AYLESFORD; a story of the Refugees. By Chas. J. PETERSON. Philadelphia: 112 Chestnut street; Boston, Phillips, Sampson & Co.; New-York, J. C. Derby.

An "advance copy" of this came to hand too late for a general reading. It claims to be a historical novel of superior merit. We notice from the titles of the chapters, that it contains many exciting scenes of shipwreck, fire in the woods, abduction, pursuit, rescue, &c., and ends with a "wedding in 1780."

P. S.—A friend who has read this commends it highly.

FIRST LESSONS IN GEOGRAPHY. By JAMES MONTEITH. New-York: A. L. Barnes.

This little book is National Geographical Series, No. 1. It is well suited for its object, as given in the title, and is very handsomely executed. It contains, as it should, many very good illustrations, maps, &c.

List of Patents Issued

FROM FEB. 7, TO FEB. 27, 1855.

James Allen, of Frease's Store, Ohio, improvement in clover hullers.

Wm. H. Allen, Lowell, improvement in machines for chopping meat and other substances.

Hiram Berdam, New-York, improvement in life boats.

Thomas D. Aylsworth, Frankfott, New-York, improvement in hop frames.

H. Clark, Newport, Fla., improvement in cotton gins.

E. B. Clement, Barnet, Vt., improvement in churns.

George Daniels, Philadelphia, improvement in the threshers and cleaners of grain.

John Diek, New-York, improvement in stays for articles of dress.

Henry T. Dexter, Zanesville, improvement in wharf boats.

G. Esterly, Heart Prairie, Wis., improvement in ploughs.

James Esterly, Albany, improved magazine smoke consuming pipe.

Phineas Emmons, New-York, improvement in cracker machines.

H. W. Evans, Philadelphia, improved spirit levels.

Asahel Fairchild, Ashland, Ohio, improvement in steam boiler chimney.

Wm. Fazzard, Newark, improvement in machinery for felting hat bodies.

John W. Haggard and George Bull, Bloomington, Ill., improvement in rotary ploughs.

Alonzo Hitchcock, Chicago, improvement in weather strips for doors.

George H. and Benjamin H. Horn, Brooklyn, improvement in sewing machines.

Fred. Howes, Yarmouth Port, Mass., improvement in ships' standing rigging.

Wm. S. Maclaurin, New-York, method of teaching penmanship.

Matthew H. Merriam, Chelsea, Mass., and J. B. Crosby, Stoneham, Mass., improvement in leather splitting machine.

Robert J. Morrison, Richmond, Va., assignor to himself and Edwin A. Morrison, Lawrenceville, improvement in grass harvesters.

Josiah H. Noyes, Abington, Mass., improvement in lamp extinguishers.

Jefferson Parker, Louisville, improvement in machines for slaughtering hogs.

S. M. and Wm. F. Stillman, Leonardsville, N. Y., improvement in garden rakes.

Wm. D. Titus and Robert W. Fenwick, Brooklyn, improvement in bridle bits.

Ira Reynolds, Republic, Ohio, improvement in ploughs.

John Tremper, Philadelphia, improvement in steam valves.

J. N. Williams, Dubuque, improvement in head spporters for railroad cars.

A. B. Childs and H. W. Dickenson, Rochester, N. Y., for method of feeding paper to printing presses by machinery.

E. A. Forbush, Ashland, Mass., improved sewing machine.

Frederick Denzler, N. Y. city, new form of bank lock.

G. B. Clarke, Leonardsville, N. Y., chimney safe.

Geo. Blanchard, Washington, D. C., life-saving raft.

Levi Bissell, N. Y. city, improved metallic spring.

J. H. Bennett, Bennington, Vt., straw cutter.

C. R. Barnes, Oswego, N. Y., mill stone dress for hulling rice.

Yarnall Bally, West Chester, Pa., fluid burners.

S. H. Noble, Westfield, Mass., screw wrenches.

J. S. Keith and J. Brooks, Canton, Mass., bullet moulds.

G. P. Ketchum, Bedford, Ind., new method of driving pairs of reciprocating saws.

Gustavus Hammer, Cincinnati, Ohio, pump valves.

C. C. Hall, Portland, Me., manufacturing paper from resinous barks.

Daniel Haldeman, Morgantown, Va., improved harrow.

Joel Hastings, James Ramsey and H. G. Chamberlain, St. Johnsbury, Vt., machine for cutting tenons.

Joseph G. Goshon and S. M. Eby, Shirleysburg, Pa., maize leaves as a substitute for tobacco.

Samuel Wetherill, Bethlehem, Pa., mode of manufacturing zinc white.

Carriington Wilson, N.Y. city, improved griddle.

Thos. Tripp, Sandy Creek, N. Y., improved water wheel.

G. N. Todd, Dundaff, Pa., self-regulating water gates.

Samuel Taggart, Indianapolis, Ind., new method of feeding flour bolts.

Wm. Stephens, Richmond, Ind., slide rest for engine lathes.

Samuel R. Smith and Elijah Cowels, Hadley, Mass., machine for cutting wood into slivers.

Wm. Sage, Durham, Conn., air heater.

W. C. Sanford, Meriden, Conn., improvements in skates.

J. A. Robinson, Poplin, N. H., hand cultivator.

Jacob Pierson, Alexandria, Va., machine for manufacturing hoops.

J. T. Ogden, assignor to himself and Thomas Goddard, Boston, Mass., carriage windows.

O. W. Brown, Boston, Mass., assignor, to G. W. Banker, Watertown, Mass., and G. O. Carpenter, South Reading, Mass., for improved paint mill.

Henry S. Ackerly, New-York, improvement in piano forte frames.

J. Bale, of Buffalo, improvement in hotel annunciators.

James R. Blake, of Worcester, Mass., improvement in gas cooking-stoves.

S. R. Bryant, of New-York, improved anchor tripper.

Henry V. Corbett, Buffalo, improved mode of raising sunken vessels.

Wm. B. Emery, of Albany, method of adjusting cylinders in boring machines.

Wm. B. Emery, Albany, method of adjusting staff in planing machines.

Ammi M. George, Nashua, improvement in machines for making chain links.

Daniel B. Neil, Mount Gilead, Ohio, improvement in repeating single barreled firearms.

Amos Nudd, Exeter, N. H., fire-engines.

Obadiah Merland, Boston, improvement in rollers and dryers, for paper-making.

Chas. Miller, New-York, improvement in machines for making butt hinges.

Chas. Morris, New-Haven, improved machine for shearing leather straps.

Zadoc Pangborn, Algonac, Mich., improvement in the construction of vessels.

F. Peale, Philadelphia, improvement in propellers.

Robert Romaine, Montreal, improvement in seed-planters. Patented in England, May 31, 1853.

George S. G. Spencer, Boston, improvement in hot air furnaces.

Wm. Steele, Wheeling, turning machine.

Joseph Stevenson, Wheeling, Philadelphia, life boat or life preserver.

John Stull, Philadelphia, improved stereoscope case.

Wm. L. Young, Muscatine, Iowa, machine for cutting barrel heads.

Lewis Teese & Son, San Francisco, improvement in forks for gold diggers. Ante-dated November 22, 1854.

Jeremiah P Smith, Hummelstown, Pa., improvement in corn shellers.

Hiram Hawley, Rome, N. Y., mandrel for holding carriage hubs, &c.

D. W. Hughes, New-London, Mo., improvement in hemp brakes.

Wm. V. Gee, New-Haven, assignor to the Atwater and Bristol Manufacturing Company of same place, improvement in looms.

Alex. Kirkwood, Jackson Co., Miss., method of pumping water out of vessels.

Asa Landphere, Albion, Pa., and Samuel Remington, Ilion, N. Y., spoke machine.

Peter Lear, Boston, improved method of arranging and operating submerged horizontal paddle wheels.

Chas. Leavitt, Quincy, improvement in portable grain mills.

Martin H. Mansfield, Ashland, Ohio, improvement in hulling and cleaning clover seed.

F. Russell, Boston, improvement in mowing machines.

Thomas C. Ball, Walpole, improvement in screw jacks.

Andrew J. Burnhart, Schoolcraft, Mich., improvement in seed planters.

David Russell, Drewsburg, Ind., improvement in spade ploughs.

Jno. Haslam, New-York, and Jas. Haslam, Scarsdale, (sole heirs of Joseph Haslam, deceased) improvement in covering thread with wool or silk.

Daniel W. Messer, Boston, assignor to himself, R. B. Fitts, and Albert James, of the same place, improved hand stamp.

Horatio N. Gambrill, and Singleton F. Burgee, of Woodbury Mills, Md., improvement in carding machines. Patented in England, August 24, 1854.

Jehu Hollingsworth, and Ralph S. Mershon, Zanesville, improvement in firearms. Patented in England, August 1, 1854.

Ralph S. Mershon, and Jehu Hollingsworth, Zanesville, improvement in repeating firearms. Patented in England, August 1, 1854.

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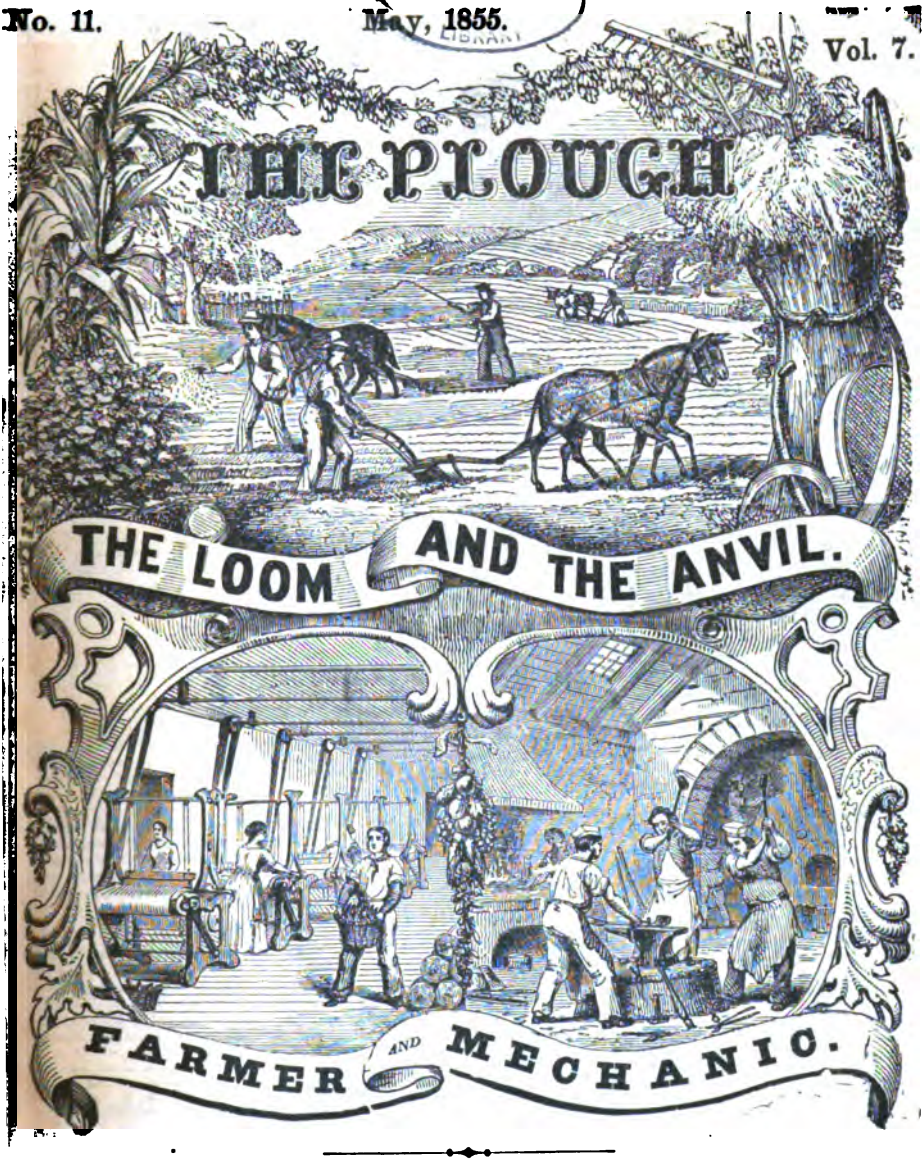

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Is devoted to Scientific and Practical Agriculture, Manufactures, Mechanics, with Designs of Farm Buildings, Cottages, &c.; the best Cultivation of Fruits and Plants; the proper care of Cattle, Horses, Sheep, Hogs, Poultry, Bees, &c. It will point out, also, the true policy to be pursued for the encouragement of American industry, without which there can be no secure foundation for American Independence. It is issued MONTHLY, each number containing SIXTY-FOUR pages of reading matter, with frequent Illustrations, Engravings, &c., at the following

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WM. WHITE SMITH, of Philadelphia, is our Agent for Pennsylvania. S. D. ALLEN is General Agent for this Journal.

HURD'S HAIR RESTORER,
AND
HURD'S GOLDEN GLOSS,
BY THE
CHEMICAL MANUFACTURING CO.,
293 BROADWAY, N.Y.

HURD'S HAIR RESTORER will produce a new growth of hair on any BALD HEAD, when used according to directions. We are prepared to maintain this assertion with proofs that satisfy the most sceptical. As certificates when the names are not known, are liable to be branded as fictitious, we copy the following from the Daily Intelligencer, Petersburgh, Va.

HURD'S HAIR RESTORER.—This preparation seems to be efficacious for the restoration of the hair upon bald heads. We have seen the testimony of persons well known to us, who have used the compound successfully, thereby corroborating the opinion of its restorative energy. We know of nothing more desirable in the way of personal comeliness and comfort than a good head of hair, and any process by which this crowning ornament of the outer man can be preserved or recovered when lost, without, in the latter case, a resort to Wigs, Toupees, and Scratches, deserves to be hailed and embraced with gratitude by all of either sex who are unlucky enough to need its benefits.

HURD'S GOLDEN GLOSS FOR BEAUTIFYING THE HAIR.

This preparation is highly perfumed; it gives to the hair a dark, soft, glossy, and lively appearance, which cannot be obtained from any other article. It effectually cleanses the scalp from Dandruff and Scurf, and keeps the head clean and healthy. It prevents the Hair from falling off or turning grey, and inspires it with new life and vigor; and while it adds beauty will relieve pain, for it is an almost certain remedy for all cutaneous diseases, such as Scald Heads, Erysipelas, Salt Rheum, &c., and will also relieve sympathetic attacks of Nervous and Sick Headache. HURD'S HAIR RESTORER $1, and the GOLDEN GLOSS 25 cents the bottle, at retail by Druggists generally. Wholesale, by the Chemical Manufacturing Co., 293 Broadway, N.Y., where all orders will be promptly attended to.

FAIRBANKS' PLATFORM SCALES,
The Acknowledged Standard!
VARIOUS MODIFICATIONS, AS
RAILROAD SCALES, HAY SCALES, AND CATTLE SCALES,
WITH IRON LEVERS AND STEEL BEARINGS, FOR FARMERS' USE.

IRON SCALES, &C., &C.

New-York State Agricultural Society,
State Agricultural Rooms, Albany, Feb 20, 18[illegible]

At the Show of the Society, held at Buffalo, in September last, a *Cattle-weighing Machine* was erected by Messrs. T. & B. Fairbanks & Co., of St. Johnsbury, Vt. The Scales of Messrs. Fairbanks were selected as most likely to give satisfaction to the exhibitors of fat cattle. The judges appointed on miscellaneous articles awarded the first premium of the Society for the machine which was erected by them,—and the judges on fat cattle, who attended the weighing of all cattle exhibited, expressed their approbation of the great accuracy of the machine.

BENJ. P. JOHNSON Cor. Secr

Sold and Warranted by FAIRBANKS & Co., 89 Water Street, New-York.

The Plough, the Loom, and the Anvil.

Vol. VII. MAY, 1855. No. 11.

AMERICAN INDUSTRY.

PRODUCTS SECTIONAL—VARIETY AMPLE—COMMERCE INDISPENSABLE.

The wide extent and variety of surface of the territory of the United States not only permits but demands a very considerable variety in their agricultural products. It is true that, with few exceptions, the same vegetables may be grown for our own tables in almost every state; but it is also true that, for profitable culture on an extensive scale, different sections of the country, so various in soil and climate, require us to rely on those products which are best suited to the conditions presented. It is not caprice, nor fancy, nor fogyism, that in this sense, and to this extent, limits the farmers of one section to the production of cotton or of rice, and of another to sugar, and a third to cereals, etc. On one or another of these crops every farmer must rely as his chief dependence, however he may be disposed to indulge in variety, or to enter upon "improved systems." Regard should be had, to some extent, to the practice, now so popular on paper, of rotation in crops; but even in this, there is such a thing as adhering to the letter in utter disregard of the spirit, and to the injury of the farmer, if not of the farm.

Nor is this limitation in the number of profitable crops, in our view, entirely unfortunate and an evil. We have often advocated the doctrine, that every community should be, as far as possible, independent of all others. This doctrine is based on two elementary ideas, to wit: first, that it is hazardous, in time of war, to be dependent on an enemy; and the second, and the greater, this independence obviates the necessity of expensive carriers. But neither of these reasons applies with much force to parts of the same country. They have, and ought to have, a sense of mutual dependence. Such is, in fact, the case, to a very great extent. Statistical tables of the various products of this country furnish full illustrations and abundant evidence on this subject. Thus: of 108 millions of bushels of potatoes raised in the states, by the census of 1840, Maine and New-York raised 40 millions; of 14 millions tons of hay, worth about $97,000,000, New-York, Ohio, and Pennsylvania raised more than five millions; of 84 millions bushels of wheat, New-York, Pennsylvania, Ohio, and Virginia raised more than 52 millions; of 123 millions bushels of oats, those four great states raised over 68 millions; of about 4½ millions of dollars invested in fisheries, Massachusetts owns 3½. By the last census, more than two-thirds the entire crop of wool,

valued at near 16 millions, were produced in New-York and Ohio; of butter, the entire product being 50 millions of dollars, or 313 millions of lbs., New-York produced about 80 millions of lbs.; of cotton and woolen manufactures, which together amount to the sum of 105 millions of dollars, Massachusetts alone produces more than 38½ millions, and New-England more than 68 millions; of tobacco, the crop being about 200 millions lbs., Kentucky and Virginia produce 111 millions; of 215 millions lbs. of rice, South Carolina produces about 160 millions; of the cotton crop, valued at 98½ millions of dollars, Georgia, Alabama, and Mississippi raised more than two-thirds, the entire crop being confined to six of the Southern and South-western states.

Eight different states produce the greatest amount of one or more crops, or products, viz: Massachusetts, New-York, Pennsylvania, Virginia, Georgia, Alabama, Tennessee, and Ohio, while four others must be added to the list, if we include the second highest, viz: New-Hampshire, Rhode Island, Kentucky, and Texas; and of each of these products, the total value is over $10,000,000. This precedence in the amount of production among the states, it will be perceived, belongs to the most widely separated portions of our country.

Says Mr. Tucker, in his valuable work, *Progress of the United States:* "Two-thirds of the mining labor is in the Middle and Southern States. The Southern States stand foremost in agricultural labor, though they hold but the third rank in population. The Middle States employ the least labor in agriculture, in proportion to their numbers. In commerce, however, they employ the most, and next to them the New-England States. The same two divisions take the lead in manufactures, they contributing nearly two-thirds the labor employed in this branch of industry. Three-fourths the seamen are furnished by New-England."

By the census of 1840, according to Mr. Tucker, the following was the geographical position of the several industrial interests:

	Mining.	Agricul.	Commerce.	Manuf.	Ocean Navig.	Inter. Navig.	Learned Profes.
N. E. States,	5.3	11.1	15.1	23.6	75.3	5.8	16.9
Middle States,	46.7	21.7	42.6	42.2	17.3	53.2	37.6
Southern "	21.1	24.8	11.	11.1	3.5	5.6	12.1
S. West. "	1.6	18.5	12.3	4.8	3.	12.5	9.8
N. West. "	25.3	23.9	19.	18.3	.9	22.9	23.6
	100.	100.	100.	100.	100.	100.	100.

The entire value of the annual agricultural and manufactured products, *in* he same geographical divisions, was as follows:

	Agriculture.	Manufactures.
New-England States,	$74,749,889	$82,784,185
Middle "	213,628,160	100,161,132
Southern " (ex. Florida,)	139,083,614	15,040,324
S. Western "	110,789,390	11,028,717
N. Western " (ex. Wis. & Iowa,)	112,964,907	30,821,866

The entire value of annual products, in these divisions, by the census of 0, was as follows:

New-England States, - - -	$187,657,294
Middle " - - -	390,558,303
Southern " - - -	175,321,836
S. Western " - - -	138,607,378
N. Western " - - -	170,987,925

By the census of 1850, the value of the agricultural products of the United States was as follows:

Indian Corn was estimated at - - -	$296,035,552
Wheat, - - - - - - - -	100,485,944
Cotton, - - - - - - - -	98,603,720
Hay, - - - - - - - - -	96,870,494
Butter, - - - - - - - -	50,135,248
Potatoes, - - - - - - - -	45,453,232
Oats, - - - - - - - -	43,975,253
Wool, - - - - - - - -	15,755,087
Tobacco, - - - - - - - -	18,982,686
Sugar, (cane,) - - - - - -	12,378,850
Other vegetable products, with milk not included in butter and cheese, - - - -	106,774,794
Making a grand total of - -	$879,847,140

[NOTE.—In this table we do not include live stock, slaughtered animals orchard products, manures, etc., which are of immense amount, though very difficult to estimate. The TOTAL is estimated at over 1,326 millions of dollars.]

But a more extended view, while it confirms the statement we would illustrate, may also be of interest in various ways. Hence, we have prepared, at considerable labor, from the volume of the Census Returns recently published by Mr. De Bow, the following table, which specifies the relative position of each state, in respect to all the productions which are reported as exceeding $10,000,000. Those numbered 1, are the highest, and so on:

TABLE SHOWING THE RELATIVE PRODUCTION OF VARIOUS INDUSTRIAL PRODUCTS.

State and ratio to total population.		Indian Corn.	Wheat.	Cotton.	Hay.	Oats.	Butter.	Home-made Manuf.	Irish Potatoes.	Sweet Potatoes.	Wool.	Tobacco.	Cane Sugar.	Cotton Manuf.	Woolen Manuf.	Fisheries.
Connecticut,	1.60	27	25		9	21	16	22	9			8		5	3	2
Maine,	2.51	28	20		5	19	10	15	7		12			7	10	3
Massachusetts,	4.29	23	27		6	28	12	21	6					1	1	1
New-Hampshire,	1.37	29	23		8	24	15	16	5		14			2	6	9
Rhode Island,	.64	30	30		20	27	28		19					3	5	8
Vermont,	1.35	24	18		4	17	16	18	4		3				7	
New-York,	13.86	13	3		1	1	1	10	1	22	2			6	2	4
New-Jersey,	2.11	18	14		10	13	9	24	8	13				11		
Pennsylvania,	9.97	12	1		2	2	2	14	2	20	4	11		4	4	
Delaware,	.39	22	19		23	26	27		24	19				14		
Maryland,	2.51	15	8		15	18	21	25	18	15		3		9		
Virginia,	6.13	7	4	11	13	4	7	8	15	7	5	1		10	9	6
North Carolina,	3.75	10	12	9	16	10	20	4	20	3	16	6		12		5
South Carolina,	2 88	14	17	4	26	16	23	12	27	5				13		
Georgia,	3.91	8	16	2	24	11	19	6	25	1	15	13	4	8		
Florida,	.38	25	28	10	30	30	30		30	12		10	2			
Texas,	.92	20	26	8	28	28	24	19	29	9			2			11
Alabama,	3.23	9	21	1	22	14	18	5	23	2						
Mississippi,	2.61	11	24	3	27	22	17		22	4						
Louisiana,	2.33	16	29	6	25	29	29	28	28	8			1			
Arkansas,	.90	17	22	7	29	26	26	14	26	11						
Tennessee,	4 32	5	13	5	21	7	11	1	16	6	11	4		15		
Missouri,	2 94	6	10		17	9	13	8	17	14	10	5				
Kentucky,	4.24	2	11	12	18	6	8	2	13	10	7	2				
Ohio,	8.54	1	2		3	3	3	7	3	17	1	7		8		10
Indiana,	4.26	4	6	13	12	8	4	9	12	16	6	9				
Illinois,	3.67	3	5		7	5	5	11	10	18	6	12				
Michigan,	1.71	21	7		11	15	15	17	11	23	9					7
Wisconsin,	1.32	26	9		14	12	12		14							12
Iowa,	.83	19	15		19	20	20	20	21	21						

Such a table, however, does not show the exact relation of the different states in respect to the value of their productions. The first half dozen may produce more than all the rest, or there may be a large amount produced in nearly the whole number. Hence, we have prepared another table, in which the quantity of each of the products above described is appropriated to the several geographical sections of the United States, generally known as New-England, Middle States, Southern, South-Western, and North-Western States. As these divisions are not perhaps familiar to all, we name them in order: 1. Maine, New-Hampshire, Massachusetts, Rhode Island, Connecticut, Vermont; 2. New-York, New-Jersey, Delaware, Maryland; 3. Virginia, North Carolina, South Carolina, Georgia, Florida, *Texas; 4. Alabama, Mississippi, Louisiana, Arkansas, Tennessee; and, 5. Missouri, Kentucky, Ohio, Indiana, Illinois, Michigan, Wisconsin, Iowa. For convenience as a general reference, though not important in the use we make of it, we have placed over each division the population, the square miles of territory, and the proportional population, the whole being 100. A few territories of little value in this connection, are not included in either of the tables here presented.

THE AMOUNT OF THE CHIEF PRODUCTS OF DIFFERENT SECTIONS.

[*The second division of this table gives the value of the productions there set forth.*]

	New-England	Middle States	Southern.	S. Western.	N. Western.	Total Value of Product.
	pop. 2,728,116 sq. m. 64,220 pro. pop. 11.76	pop. 6,694,966 sq. m. 113,021 pr. pop. 24.56	pop. 3,983,865 sq. m. 577,640 pr. pop. 17.97	pop. 3,106,825 sq. m. 233,415 pr. pop. 13.30	pop. 6,379,928 sq. m. 389,980 pr. pop. 27.61	
Indian Corn, bush.	10,175,856	60,413,948	117,579,606	122,637,135	980,994,368	$896,055,453
Wheat, bush.	1,000,894	35,064,340	15,540,256	2,251,475	44,972,459	110,485,944
Cotton, bales of 400 lbs.			937,687	1,487,334	779	98,603,730
Hay, tons,	3,468,258	6,198,111	569,989	149,008	3,448,047	66,870,494
Oats, bush.	8,191,966	54,393,596	20,639,094	12,917,880	50,499,460	43,979,383
Butter, lbs.	43,924,006	134,006,008	25,574,456	19,431,988	90,511,155	50,185,948
Irish Potatoes, bush.	19,618,111	25,690,109	9,413,597	1,864,791	16,195,556	98,319,158
Sweet Potatoes, bush.	99	943,749	21,293,694	15,911,317	1,899,118	19,134,074
Wool, lbs.	7,065,509	15,463,996	5,463,619	2 673 603	24,562,519	15,755,087
Tobacco, lbs.	1,405,920	22,411,447	60,767,643	20,609,696	84,903,997	13,982,646
Cane Sugar, hhds. of 1000 lbs.			11,024	236,019	10	13,378,380
Home-made Manufactures,	$1,506,894	$3,994,270	$7,834,619	$7,618,379	$9,938,823	
Cotton Manufactures,	12,140,178	12,762,713	5,851,098	940,781	855,289	
Woolen Manufactures,	23,977,818	14,065,456	968,513	6,310	2,068,494	
Fisheries,	9,824,919	464,845	358,708		117,515	
Commerce, 1840.	12,648,740	40,040,0 1	11,057,261	14,255,974	17,969,190	
Pig, Cast, and Wrought Iron,	10,903,704	36,115,836	2,910,440	2,348,069	6,103,864	

*Texas is classed among the South-Western States in the census. We inadvertently placed it among the Southern.

The examination thus made shows us, also, that there is no one crop or product which, in amount, so greatly exceeds others as to be of right regarded as the especial source of national wealth. If there are such products, to any extent worthy of such distinction, it belongs to the class of grains, which are not only so necessary to every community, but which are also very imposing in their amount—the value of this crop being more than 600 millions of dollars annually. And among all these varieties, Indian corn is nearly one-half the gross amount in value; and, at the same time, as if to prevent all sectional jealousy, there is no crop which is so extensively cultivated among the different states as this. Sixteen states raise, each of them, over ten millions of bushels annually; and there are but three states in all that do not raise more than a million bushels.

We do not regard our cotton crop as an exception to the statements we have made. It is of immense value, in its direct and indirect results, as we shall see clearly in the sequel. But in the value of the crop itself, taking the census as authority, it is exceeded both by Indian corn and wheat, and is nearly equalled by the hay crop. True, it moves a multitude of spindles; and the clatter of its looms, if heard in one grand, industrial chorus, would shut out from our hearing the very thunder, and the roar of our Niagara would be silenced in its presence. It builds ships, employs many sailors, clothes millions of people, rears cities, and is potent in directing the movements of commerce in this and other countries. Whoever speaks lightly of the importance of this crop, in its financial relations, is a madman or a fool. But we shall still insist, and the sequel will illustrate the position, that a wise Providence has built up this vast republic, so distant in its geographical extremes, and so various in its possible developments, yet so related and so combined and interwoven in its wants, its products, and its interests, and so mutually dependent and mutually sustaining, that it would seem to require more than the wild frenzy of a madman, or the reckless abandonment of a fanatic, to break it in pieces. We should deem no force competent to overcome all these natural bands, cemented as they are by treasure and by blood—blood shed in the common defence, and the blood of families intermingled, and now beating in living hearts; and, we verily believe, that no arm but that of an avenging God will ever bring this fair heritage to desolation. That bale of cotton, picked by single hands, ginned and conveyed by railroad and steamer, dropping coins of gold all along its way, is spun and woven into fabrics that are found in every village shop in Christendom. No less really do those threads run through the very woof and web of our social organism. Perhaps the wool of some Western or some New-England flock is taken for the filling of which this cotton forms the warp. If it be so, these two products of distant states are not more intimately connected, in all future time, than the distant states, so dissimilar in almost every physical feature, from which these materials are brought.

It is not, however, the value of a crop or product which determines its financial importance in a national view, nor yet in the leger of the producer. It may have cost all it will bring, though its market price is estimated by tens of millions. The amount of its "transactions" in the price current may be comparatively small, and yet it may be highly remunerative. Some fertile lands are so cultivated as to be even a source of expense. Some soils of moderate value in the market are made to pay very handsome dividends.

There are sections of country where wheat "will not pay." Sheep and wool are of doubtful value as an income in large sections of country. In such cases, these crops, though they may swell the column of "aggregates,"

are of no great pecuniary benefit to anybody. We have recently seen the statement, by one evidently familiar with the subject, though he may be in error in his calculations, that the entire cotton crop costs the planter eight cents a pound. If so, the planter is enriching factors and manufacturers at his own private expense, and he is bound, in justice to himself, to keep his accounts with great care.

But other considerations of great importance belong to this view of our subject. Some crops pass directly from the producer to the consumer, though perhaps burdened with sundry commissions and charges. They are conveyed, and only conveyed, and then consumed.

We have been trying to persuade those who supply our markets, that the neglect of attending to these matters is the cause, and, we think, in many cases, the sole cause of their poverty. One can not afford to produce scarcely any thing at half the "market price." If he does, he must ever be a producer, and never rest from his labor, nor ever be able to save any portion of the avails of his labor for the supply of his future wants.

Some products pass into second hands, where, by the exercise of skill and labor, their value is greatly enhanced. Perhaps the second profits are greater than the first. A moderate illustration of this occurs in wheat. The flour-mills of this country employ some 38,000 men, either as millers or as millwrights. A much greater secondary profit arises from the manufacture of wool. The annual wool crop of this country, as we have seen, amounts to about $16,000,000. Wool is also imported to the amount of about $2,000,000. But the woolen manufactures of this country amount to more than $43,000,000. Nearly forty thousand hands are employed, permanently, while the capital invested in this manufacture exceeds $28,000,000.

But a far more notable illustration is seen in the cotton crop. The value of this crop is less than a hundred millions, and of this about ninety millions value is exported, while very little raw material is brought into the country. Yet the value of our cotton manufactures is about $62,000,000. This gives employment to nearly a hundred thousand men and women, while over $75,000,000 capital is invested in it. The manufacture of wool, again, consumes some 46,000 tons of coal, and that of cotton some 120,000, the production of which furnishes support to other thousands. So, too, the iron trade —the value of which is about $60,000,000 annually—consumes one-and-a-quarter millions of tons of coal, and more than seventy millions bushels of charcoal—another valuable source of remunerative industry.

A large part of the cotton crop, as we have just stated, is sent abroad. This service furnishes employment, in addition to a large force employed in inland navigation, to 800,000 tons of shipping, and to 40,000 seamen. In previous numbers, we have discussed, in various forms, the public and private bearings of such labor and charges. Items of cost, adding nothing to the value of the raw material, are not, in general, regarded with much favor by producers, and yet they are, of course, sometimes absolutely necessary. They are, however, entered on the profit and loss account, and, by their exact amount, diminish the balance of the credit side, if they do not sometimes destroy it. But cotton is not alone here. It is but lately that we have read that the short crop of wheat has most essentially diminished the business of our canals, and left thousands of boatmen without employment.

It may be the payment of such charges, however, that swells the value of these crops to such enormous sums. We remember the time, and so can some much younger than we, when corn was worth scarcely ten cents a bushel in Ohio. It may be so now in some dark corner. But this was the result of

enormous expenses for freight, etc., before railroads were so frequent. Now, when the market is open, when there is rapid communication between sellers and purchasers, taxes of this sort are paid, and still the *nett* price of the crop is more than quadrupled.

If we should, therefore, conclude, as a matter of course, that all these charges were really a loss, a burden, our logic would be in fault. It would be just as rational to say that the cost of the harvest is a loss.

When these commissions, charges of freight, brokerage, etc., are the necessary means of producing high prices, they ought to be paid cheerfully, as in the case of the Ohio farmer. But if they are not necessary; if arrangements can be made for commanding present prices, and yet for dispensing with some of the immense outlays demanded by the present usages of trade, then these charges are not only a tax, but a useless tax, to their full amount. Hence, it is proper, in all such cases, to enquire who pays these charges, the producer or the purchaser. Let us use a familiar illustration. A merchant sells goods to A. for $50, agreeing to deliver them. He sends them by packet or by steam. The owner of the packet is a gainer by this transaction, but the charge comes out of the $50, and it appears on the profit and loss account. But suppose he sells for $45 in the warehouse? No such entry is then made in the profit and loss account, and yet the balance is just what it was before. The goods, in fact, are still charged with the freight, and he neither gains nor loses by the change. But suppose he finds a new customer, B., and sells, when delivered, for $75, the freight being $10. He makes a profit of $20 by this change. The ten dollars are not a loss, but a source of profit. And, yet, if you talk about that merchandise as estimated at $75, or $75,000,000, it is obvious that ere the real value of it is ascertained, all these charges must be deducted. If our corn crop was not wanted at home, but must needs be exported for a market; if it should cost all our shipping to do this service, and employ all our seamen, it would do much towards making this immense crop of no real value to the producer, and to the country it would be valuable just in proportion to the number of men it would support, and the capital it would profitably employ.

Were a HOME MARKET erected for our cotton; were those forests of British spindles to be transported to Georgia and South Carolina, we might retain in our own neighborhood all the benefits of this trade, which now do so much to build up and perpetuate the enormous power of our island rival. Th profits of the foreign capitalist, the foreign manufacturer, the foreign artisan, the foreign spinner, and weaver, and colorer, would all be secured by our own citizens, and, perhaps, within sight of the growing crop. True, the manufactured goods must then be exported, and thus the shipping interest would still be needed as now; but the grower of food and clothing would find his market wonderfully increased, and builders of houses, and owners of house-lots, and brick-makers, and lumber-men, masons, paper-hangers, tailors, shoemakers, etc., etc.—a great multitude, would throng those shores, an untold capital would find a profitable investment, and barren wastes would echo, without interruption, the hum of prosperous and happy families; manufactures of all kinds would be greatly increased; the South and South-west would be dotted all over with cities, ever growing, and, day and night, the hum of profitable industry would not cease; and, by-and-by, the splendid mansions of those made rich by this change, and who retired from the strife after wealth, satisfied with its results, would adorn suburbs of those cities and our rural districts and society would be enriched by the refinements and elegancies which wealth and industry only can procure.

STATE PATRONAGE OF AGRICULTURE.

The following action of the Maine Legislature is commendable. It exerts a double influence, modifying the character and arrangement of the courses of lectures on chemistry and vegetable physiology, thereby securing more attention to these departments, for the benefit of all the students, while the liberal endowment, conditionally offered, provides for the instruction of an entire class of young men, (and old ones, too, if they will,) thus far without valuable facilities of improvement in these hitherto neglected sciences.

The third section, however, is entirely too general. The obligation to analyze all soils, manures, plants, and seeds, sent by any farmer of the State, might require the constant employment of a dozen experienced chemists. Had it been confined to the "Board of Agriculture," who may be supposed to be reasonable men, no special danger of that sort might be apprehended.

An Act to endow the Chemical Professorships of Bowdoin and Waterville Colleges, on certain conditions.

Be it enacted by the Senate and House of Representatives in Legislature assembled, as follows:

Section 1. The State Treasurer is hereby authorised and directed to transfer the sum of thirty thousand dollars, in six per cent. State Stock, to the Board of Trustees of Bowdoin College, and the like sum of thirty thousand dollars, in six per cent. State Stock, to the Board of trustees of Waterville College, to be held in trust by them respectively, as endowments of the Chemical Professorships in these Colleges, of which they are Trustees, whenever said Board of Trustees shall severally certify to the State Treasurer, through their Secretaries, under oath, that they have enlarged the duties and means of instruction under said professorships, so as to embrace Agricultural Chemistry and Vegetable Physiology; and that they will comply with the requisitions hereinafter specified.

Sec. 2. It shall be the duty of said Board of Trustees, to cause instruction to be given without fee, to all persons, inhabitants of this State, not undergraduates in a regular college course of instruction, who may resort to said institutions as students under the Professorships of Chemistry only; they having the same privileges of the several libraries and on the same terms, and being subject to the same college laws, rules, and regulations as other students, so far as they may be applicable to their position in said institutions; and such students may attend, without charge, all the lectures in said colleges, under such restrictions as may be imposed by said Boards of Trustees, and sanctioned by the Board of Agriculture.

Sec. 3. It shall be the duty of the Professors of Chemistry in each of these colleges, to analyze or cause to be analyzed, as speedily as may be, all soils, manures, plants, and seeds, sent to said colleges for this purpose, by the farmers of this State or the Board of Agriculture, without charge to the applicant, and report the result to him, with such suggestions as he may deem necessary in the premises; and annually, on or before the first Wednesday in January, report to the Secretary of the Board of Agriculture a full statement of his doings, with such other matter as he may deem suitable.

Sec. 4. A committee of three from the Board of Agriculture, elected at its annual meeting, shall constitute an examining committee, to visit, from time to time, the Chemical departments of said Colleges, to witness their

instructions and doings, with special reference to the interests of Agricultural Science; and annually, on or before the first Wednesday in January, report to the Secretary of the Board of Agriculture a statement, so far as they are able, of the doing, conditions, and prospects of these departments.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

FAIRS—THEIR BENEFITS, ETC.

MESSRS. EDITORS:—In the January number of your journal, an article of mine was published on "Fair Benefits," to which a lengthy editorial is appended, giving a wide expansion to the subject. And first, the editor goes on to say that fairs are not designed for the especial benefit of those who receive premiums, but for the masses, or the people at large. Of course this policy is correct; and it was my object to sustain the same doctrine and principles in my article. The premiums, of course, are one of the leading causes, and a part and parcel of the whole system by which fairs are sustained. And, although the competition for premiums is open to all, but a small number of exhibitors can obtain what are called "first prizes," yet a larger number will obtain many of the grade premiums. The writer then goes on to suppose a case where all articles were to be shut up from the sight of the visitors, except those which had received a premium. How many tickets could then be sold, etc.? Probably seven-eighths of all the exhibitors at our fairs, offer their articles for premiums, while one-eighth may offer them simply for exhibition and sale. In many instances, the premiums are of no particular consequence except to bring the articles before the public. In many cases, exhibitors of machines, etc., have no eye on the premiums at all, but wish to bring them before the public for examination, and a future market. We do not see the force of the editor's argument, when he says, in substance, that if all the articles on which premiums have been awarded were removed or destroyed, our fairs would suffer but little, as the loss would be hardly noticed by the public, since about as good a show would be left without the premium articles, as with, etc. Then he asks again, "For whose benefit are fairs instituted? Are they for those who exhibit especially, etc.?" But, as we have said before, the premiums are a part and parcel of the whole system, and so combined, that you can not well have one without the other attached. It may be true, a good or tolerable exhibition of articles may be had outside of the premium articles. But what brings such articles to the exhibition? It may be safe to say that seven-eighths of such articles were entered for premium, in the first place, but failed to obtain such notice at the hands of the committeee, although, in many cases, they were equal to any on the ground. So, then, to say that as good an exhibition can be had without the premium articles as with, is, we claim, saying that which is not strictly true. Because, if you break up the system and order of the exhibition, then, unless fairs can be sustained on some principle entirely free from selfishness, where every body will do all things and furnish all things for the exhibition, free gratis, can we expect to see free fairs sustained by the people? Our experience has shown us that farmers should not be so anxious to show their corn or animals for the sake of saying that no better were to be seen in the country than theirs. But that such animals and such corn were the best they had, and they brought them to the exhibition for the sake of making a good show,

and drawing a premium, if they could, by fair means; and this idea is a just one. We never went on the principle that if no crops or animals were better than those that had already obtained the first premium, no premiums should thereafter be offered, unless some things superior to those could be produced; for we have not as yet reached that point of excellence in productions or management. The idea is, for judges to give premiums for the best articles shown on the ground, although there may be articles of double the value in the county or state of the same kind. Yet they are not on the ground, and so the judges must do the best they can with the articles before them. But the writer says, in substance, that the ultimate aim of all shows is to affect the masses of the people through the senses. So say we; but how to come at that point in the most practical way is the question. Though the writer seems to think that if reading an account of the show at home was all that was necessary, then a few "itinerant committees," appointed and paid for by the State, would be the best thing to meet this demand. For our own part, we have but little faith in these "State Agents" to accomplish much good in that way. In most cases, they would have a stronger look for the "dollars" than for agricultural improvement. But the writer then goes on to ask, whether it is best to tax the people with such an assessment as will hinder them from seeing the show, and thinks such a plan is unwise—whether the tickets should be a sixpence, a shilling, or a quarter—he does not stop to ask, etc. Now, our idea is, as we said in our former article, that the people should bear their share of this tax, because, in principle, it is a one per cent. tax to a ninety-nine per cent. profit; and who is better able to pay this tax and receive this profit than the people are themselves.

It is very well known that the masses of people at large do not value a small tax of the above description when they become interested in the exhibition; and in reality thay feel disposed to learn something from it. Of course, it is understood that the farmers, who feel more interested in the support of these exhibitions than do the people in general, will do more towards their support. And, in fact, the greater part, or the whole of the management must be sustained by the farmers at large; still the people should be willing to do their share. The writer goes on to ask at whose expense the temperance reform is sustained, and claims that those who totally abstain are the ones to be depended on to sustain this reform, although they may not need it themselves. Then, again, he asks who sustains all the "isms" of the day—why it is those who feel interested in their support, &c. And, of course, as he says the agricultural reform belongs to this class, the farmers must be depended on to support it. Now, we beg leave to say that neither the agricultural reform nor the temperance reform are "isms," any more than they are "humbugs," as we understand it in the sense that word is made use of. But, on the other hand, both of these reforms are living, acting principles in themselves, in which the whole people should be actively interested. And why so? Because every man, woman, and child in the country is benefited by such reforms and improvements. Then, on this principle, we say it is not those who feel the importance of the reform who should be depended on to sustain it; because it is the whole people at large who get the benefit of these reforms. If this be the case, on what principle is it that a few individuals should have the burden and sustain these reforms, while the masses receive the benefits of them? But the writer goes on to say that he has been quite celebrated in his day for his advocacy of Protection to American Industry, &c. We are glad to learn that, for there is need enough of it in these days. We have known men who were great

advocates of this same doctrine, who, when they wanted a new coat, would pass by the American cloth, and nothing short of the best French would answer their purpose. We presume, however, that this writer does not belong to this class of "Protectionists," but goes in for practice as well as preaching. His plan of an Industrial Protection is a new one, and it may be all well enough; and we should be glad to have such a system of industry brought about, if it could be done; but it is much easier to lay out a plan on paper than it is to carry it out and make it work in practice. The doctrine may be all well enough, but the next thing is to carry it out and make it work in practice. When this writer can succeed in drawing out any of the State or Government funds, to be used after his plan, we should be glad to be informed of it. We have learned, after a few years of trial, that government aid was the most "lame stick" to lean upon that you could possibly name; and so we have come to place no dependence whatever on their talk. But we have much more confidence in individual effort, carried out and acted upon in concert with the people at large, for improvements of this character. And when you can succeed in getting the people waked up to the importance of protecting industry as a principle, these plans can be brought about by the people at large. If you can get government aid in any wise it will be all well enough, but we, for one, can not place any confidence in their help. Yours, truly,

L. DURAND.

Derby, Ct., March, 1855.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

ARE ROBUST HEALTH AND GOOD BUSINESS HABITS INCOMPATIBLE WITH THE GREATEST REFINEMENT?

THIS may seem to be a singular question to propound; but if we are to judge from what we see and hear, there are different opinions on the subject, and I would be glad to see some more able pen than mine brought to its discussion.

I feel deeply on this subject, and well I may, for some of my best friends fill early graves because, as it seems to me, the customs of society demand in females too great a delicacy; and it is to females more particularly that I would apply the subject. By all means, treat our sisters and female friends tenderly and kindly. But is it kindness to deprive them of all opportunity to qualify themselves physically to endure the hardships of life? Shall we be so tender of our wives and daughters, as to deprive them of the luxury of a ramble in the bright green fields, with glowing cheek and bounding pulse? I would that every woman in the land were as perfect in form as Powers' Greek Slave; but if the customs and practices of the present day continue, we shall be compelled to look among slaves and menials for models. I write this for the farmers of the land, and those who may become their companions; for if others can enjoy the society and companionship of the feeble and deformed, we can not. Our duties and pleasures have too much of real life in them to admit of that, to say nothing of the effect upon our posterity, which is a matter of vast importance, too great to be entered upon in this communication. It may be said that to be intellectual, we must be exempt from labor, and, therefore, delicately constituted. This does not agree with my observation, where labor and study have been harmoniously

combined, and good habits have done their part to strengthen and invigorate the constitution. How great a proportion of those whose minds are cultivated at the expense of physical culture are lost to the world, because they have not constitution to enable them to use the knowledge they possess, but they linger awhile in feebleness and pain, a burthen to themselves, a sorrow to their friends, and then drop into a premature grave. The remedy is, to a great extent, in our own hands. Let a correct standard of physical beauty be established in accordance with the laws of Nature, and the same pains be taken with the human form divine that is taken with the precious jewel it contains, and they will help to adorn and improve each other. W.

WHY ARE NOT SOUTHERN CROPS MORE PRODUCTIVE?

"THE records show that he (the producer of cotton, tobacco, etc,) was really paid for his exports in foreign goods, and that duties have been paid upon these to an amount over a billion of dollars; and this enormous sum the producer must have paid when he had to surrender a part of the value of his imports to government as he entered them. There is but one way in which he could have escaped, and that is by selling the part left for as much as the whole was worth before, and, by thus raising the price, throw the whole tax upon the consumer. But, *in this* case, the South must have paid a still greater share of the duties than before; for not only is she a much larger consumer of foreign merchandise than the North, but if the price of the imported article is raised, so must be the price of the similar article of domestic manufacture; and the South would pay three or four times as much in this shape to the northern manufacturer, as she would to government in the form of duties. It is true that the increased price of domestic goods would also be paid by the northern consumer; but with this important difference, that what was paid would be spent among themselves, and so in a manner returned to their pockets, as the factories are scattered through their country, while to the South it would be a dead loss." —*De Bow's Review, April*, 1855, *p.* 433.

Some theorists are so wedded to their own notions, and so fixed in their "principles," that they can not see what even their interest would prompt them to regard with favor. They see that evils exist, which are felt sometimes to be severe, but they will not admit that this state of things is the result of those conditions in which they almost alone differ from others, among whom these evils are not found. Nor will they heed the counsel of those who would urge them to modify those conditions, and make a practical test of the correctness of those theories. Now and then, however, the truth incidentally creeps out, and it would seem that, after all, there was an appreciation not only of the truth, but of the importance of such counsel. Among many examples of this sort, we would refer to the closing sentence of the foregoing extract: "But with this important difference, that what was paid would be spent among themselves, and so in a manner returned to their pockets, as their factories are scattered through their country." This admission is incidentally made in this passage; and though the learned and accomplished editor of that review might even add his powerful influence in favor of what we regard as the only wise course to pursue, yet our Southern friends generally do practically deny it, and limit themselves to the production of a few staples, which are now sold only as raw material in a foreign market, and thus they voluntarily assume the very "burdens" of which they so grievously complain, and cast upon others the reproach of inflicting upon them evils, of which they, in fact, have essentially the control.

This admission contains a great truth, a controlling truth, on which depends, in our judgment, to a very great extent, the whole question of profit and loss. Hence, if we are correct, it is a truth that no individual and no commnnity can neglect with impunity.

The question of loss and gain, in any business, depends on a proper regard for certain matters which are treated by the many as of little importance. We well remember the advice of an experienced friend when we were about engaging in a certain enterprise. "Now, remember," said he, "your profits will not be made from what you earn, but from what you SAVE." These words should be written in letters of gold in every counting-house and in every shop. Generally, if you caution a young man about his liberal indulgence and large expenses, he will tell you—"Oh, I earn enough; I have a good income." It is of little consequence what a man or a community earns, unless he or they will contrive to KEEP a portion of it. That is the difficult point in all financial operations. Many a young man gets rich on his hundreds, while many hundreds become bankrupt on their thousands. And, very often, the issue depends not so much on setting aside a portion of the receipts, with the intention of saving it, as of avoiding certain expenses, or preventing small wastes and losses.

Now, whether supposed facts and reasonings can be brought forward to the contrary, we add our testimony in confirmation of the doctrine incidentally presented in this quotation. The Northern States flourish with their indefinite variety of trades and occupations, simply by the practice of the truth here hinted at. Illustrations of it are not witnessed in "factories" alone. Hundreds of miles of railroads have been built, without the least expectation of profit in the shape of dividends, but exclusively for secondary and incidental benefits. Their money, as already invested, earns them at least lawful interest; but these wise and prudent men, men of forethought and foresight too, prefer to bury it in the railroad, with the expectation of little or no direct returns. What is their motive? Perhaps unproductive farms are thereby converted into house-lots. Perhaps a wide territory is thereby opened for trade. And factories are built. Why? Because such stocks always pay well? Far from it. They will sometimes pay largely. Sometimes they sink immense sums. But they make a new market at any rate. The factory village furnishes a market for almost anything a farmer can raise, a mechanic construct, or a merchant import. What else is needful, then, for either of these producers, but sufficient numbers of just such customers.

We do not intend to be understood that these secondary considerations generally or often control the action of *city capitalists*, when they subscribe for factory stocks. But such considerations have very often induced the less wealthy farmer and mechanic to invest their smaller savings in such establishments, and they have grown rich by such indirect means.

We have before alluded to the pine barrens, we so well remember, on and near which the thriving city of Manchester now stands; and to the $10,000 now received, annually, for MILK by the farmers of the adjoining little town of Goffstown, the land of which, in our boyhood, was as worthless as any other land in that whole region. Those farmers, could they have found the means, might almost have built those mills for nothing, without loss.

And why do not our Southern friends see all this in reference to their own territory? Is there any reason why the same results would not follow among them as at the North? But the writer of the foregoing extract would make very prominent the fact, which is, no doubt, true, in some sense, that the Southern States are burdened with severe "duties." "A billion of dollars"

has been paid. Well, all this is optional with them. Individuals may not be able to rid themselves of this "burden," if it be one, but combinations of men may. Is it asked, How? The "one way," the writer describes, in our judgment, is wholly impracticable. The way we have often pointed out is a matter of PRACTICAL DEMONSTRATION. The writer of this paragraph substantially admits it in his closing sentence. If this is not so, the "difference," he describes, would not be "important" in the view which he has taken.

These "duties," and, of course, all the incidental charges, for they are alike "a burden," which are attendant upon exportation, whether of one sort or another, are represented in this passage as "burdens" upon the producer. True, he says, "in our belief, the duties are paid partly by the producer, and partly by the consumer." But he still reasons as if all were paid by the producer. "Southern burdens and Northern profits." Writers on the great subject of "Political Economy" are, perhaps, tempted sometimes to mystify the facts, and misapply acknowledged principles, and, therefore, fail to convince each other. But we would trust any one of the thousand "given cases," belonging to this chapter of Political Economy, to the decision of a jury of ordinary intelligence, if the facts could be clearly presented, and its party bearing kept out of view. Perhaps exceptions may occur to the general rule, in this department of science, as in every other. But take a case by way of example.

The people of Ohio, at one time, were obliged to sell their corn at ten cents a bushel. But, by-and-by, communications were opened. Railroads were constructed. Those fertile lands were brought into close proximity with a ready market, and now that corn commands a dollar. But the railroad requires a "duty" of twenty cents, or TWO HUNDRED PER CENT, on the original value of the crop. How enormous! How excessively tyrannical! Such oppression who can endure! And yet this very oppressive system has converted their ten cents into eighty cents net; or, in other words, has increased the net value of the entire crop eight-fold. This tax is no "burden" upon any body. No one suffers to the amount of a farthing for it. The producer is profited; the consumer pays the duty and the eight hundred per cent., and still is profited. The carrier is well paid for his service, and none even finds fault. "Oh, yes! We require the railroad to carry our corn 'free.'" The folly of the pretended claim is too apparent almost to allow it room on the page. And yet this is clearly a tax, an assessment, a "duty;" and when used in connection with our canals, etc., these payments are sometimes officially described as "duties." Duties, then, are not always "burdens," nor "imposed," in any unfavorable or undesirable sense, by any one. They may be of great benefit, and, in some aspects of the question, may be very important, in this connection, to the cotton growers of the South. Whether they are oppressive or not is the question to be settled. But, after all, we think there is a way, and "a more excellent way," of getting rid of this "burden," if it be such, than by changing the revenue laws in the manner our Southern friends, many of them, would propose.

We have already shown that, if a given investment can be made to pay good dividends, that investment should be pronounced successful, whether it be by direct or indirect processes; and we have referred to the manner in which "the North" sustains herself under the same revenue laws, and the closing sentence of our quotation brings it out beyond the possibility of misapprehension. And how do "the North" sustain themselves, and become rich, under that same revenue system? It is by encouraging a diversity of employments. So says this able writer. So say we. It is true, and just

about the whole truth. It is their "factory" system—their facilities for trades of all kinds. "There is no friendship in trade," says the proverb; but it is false. No bigger lie was ever uttered by fraudulent huckster. It is true that there is no friendship in *many traders*. But when this is asserted as a fundamental principle of trade, it is false from A to Zed. Wholesome, prosperous trade demands, imperatively DEMANDS, a regard for the precept, "LIVE AND LET LIVE." This is the basis of all honorable traffic. Man is not an isolated being. His interests are interwoven with the interests of his associates, his "neighbors." He must recognize his fellows. He must have a prosperous community to deal with, if he would prosper, permanently, himself. What can a merchant do with bankrupt customers? What can farmers and mechanics do, if bound to deal with the moneyless and the starving? Under the name of trade, one may, for a while, plunder and rob, as too many have done with our Indians, and in the East India trade. But this is not worthy the name of trade. No. "Live and let live" is not a gospel precept alone. It is cut into the very walls of our social structure. It must be so, because the structure *is* social. This great truth is taught and proclaimed aloud in every thriving city and village. The commentary on its negation has been heard, not from any choice or intent, but yet not without emphasis, in our own midst, in the months past, and its voices are not all silent yet. This truth is proclaimed in every crowded mart, and its still, small voice is heard in the hospitalities and friendly greeting so characteristic of rural districts both north and south.

Call in, then, the various crafts. Give them room even among your cotton fields. "But who will employ them?" Why, you will employ them, and they will employ each other, through the whole chapter. Does not the blacksmith need shoes, and the shoemaker clothes?

But one department of this effort is pre-eminently important. Just transport those forests of SPINDLES now bristling through that island yonder; or, more properly, let machinists be assembled, from all quarters, on your own borders, and let them there erect their shops, and forge out those magic forms, more potent than any divining rods, and let other mechanics erect your factories, and then fill them with machinery. Let your ingenious artisans invent improvements, and let other thousands take your own bales, and transform them into various fabrics. Let this be done till you find a use for a large part of your crop, and then what do you think would be the price of raw cotton in Liverpool?

The price would then be regulated on this side the water. The large accumulations of any product at a market, determine the price of that product the world over. England now has all this crop to herself, and controls its price, for the simple reason that no body else can buy it. Create a capacity to buy, or consume, in this country, and just so far you regulate and control its market value.

The manufactured article must still be exported. Few ships and few seamen would lose their employment. But, meanwhile, you have immensely increased your profits, in various ways, so that you can really afford to sell the manufactured goods at less price even than they now are sold for. Why? Because real estate owners would realize double, and treble, and even ten-fold their present receipts for their lands. Large demands would be created at once for house-lots, for corporation purposes, and for all kinds of mechanics. Another large portion would be required for the use of those who would feed the additional population, and for the support of their own families, and so the story would go on, after the fashion of "The house that Jack built."

There might even be some "dogs that *worry* the cat," and other unpleasant incidents, but these would be comparatively but trifles.

We happen to have on our table an account of just such an operation in the State of Connecticut. In 1684, the territory of *Mattatuck* was sold "for divers good causes and 39 pounds." It was supposed capable of sustaining THIRTY FAMILIES. On this tract, the thriving village of Waterbury now stands. We passed the night there some three years ago, in a hotel which cost, when unfurnished, $40,000, and a still more costly hotel was then nearly completed. The following is "The Grand List" of that town for 1854:

DESCRIPTION OF PROPERTY.

Dwelling Houses,	$1,150,265.00
14,922 Acres of Land,	396,353.00
Stores,	65,300.00
Mills and Manufactories,	33,450.00
Horses and Mules,	28,185 00
Neat Cattle,	28,772.00
Sheep, Swine, and Poultry,	349.00
Coaches, Carriages, and Pleasure Wagons,	10,959.00
Farming Utensils and Mechanics' Tools,	25.00
Clocks, Watches, and Jewelry,	10,977.00
Piano Fortes, &c.,	6,130.00
Furniture and Libraries,	10,850.00
Bank and Insurance Stock,	169,717.00
Bridge, Turnpike, and Plank-Road Stock,	600.00
Manufacturing Stock,	2,584,787.00
State and other Stocks,	5,600.00
Railroad and other Bonds,	7,690.00
Amount employed in Trade and Merchandising,	182,997.00
Amount employed in Mechanical and Manufacturing operations,	63,375.00
Investment in Vessels and Commerce,	300.00
Money at Interest,	268,005.00
Money on hand,	1,330.00
All other Taxable Property,	2,200.00
Additions by Board of Relief,	4,803.00
Amount,	$5,033,109.00
Deduct indebtedness, &c.,	100,938.00
	$4,932,171.00
Increase over previous year, $660,377.	
Amount of Assessment, at 3 per cent.,	147,965.13
1893 Polls, at ten dollars each,	18,930.00
985 Military Subjects, at fifty cents each,	467.50
Taxable amount for 1854,	$167,362.63

Certified by

ISRAEL HOLMES, 2d, Town Clerk.

One would think this profit enough for one generation, and nearly all this is the work of those now living. There are in this town five fulling-mills, three woolen factories, three cotton factories, two tanneries, two rolling-mills, a machine shop, two iron foundries, ten button factories, a pin factory, hook

and eye factory, india-rubber goods factory, five grist-mills, sixteen saw-mills, and last, though not least, TWENTY-THREE SCHOOLS.

Now, if the Southern States would, in the words of our extract, have all their outlays "in a manner returned to their pockets," and be rid of the "burdens" of which they complain, let them do as those do whom they intended by those words to describe.

It is all very well to sit in the lap of wealth, and the free enjoyment of literary and social privileges, and of personal refinement, and to treat the "evils" incident to progress such as we have described as nuisances that can not and will not be endured. But such a course is not in good taste, at least, when one is mourning over financial burdens, and deterioration of property, and heavy expenses, and the like. These incidentals, as they might be termed, are found in groups. Mechanical industry occasions one set, inactivity and luxurious ease another set. They never get mixed up, except in some great financial crisis, which overturns and disappoints every body. We do not blame nor reproach the South even for boasting over their freedom from numerous evils that exist at the North. We should delight in the same quiet and refinement which characterises much of Southern life. We fully appreciate the high breeding, the refinements, and last, not least, the hospitalities of those States. But we can find all this, too, at the North. And as long as purses are finite things, and often seem *very* shallow, especially when used too familiarly, we learn to look upon all forms of labor, and even dust, and noise, and coarse manners, (if the intention is kind,) and the thousand elements that go to make up industrial life, in its various aspects and attendants, as of little consequence compared with the immense good which results, in various ways, from every form of industry, and among all the people.

CLIMATE.

AN erroneous idea generally prevails respecting climate, as affecting personal comfort. The dwellers in the sunny South pity the New-Englanders, because doomed to shiver in so cold a climate. They, in turn, bless their stars that they are not wading in the snows of Newfoundland.

I have been led, by observation and experience, to doubt whether the people of any one country have much, if any advantage, in the matter of climate, over others.

Our ideas of pleasure and pain are intimately connected with, if not based upon the principle of contrast. In our idea of temperature, we have less regard to the actual than to the comparative degree of warmth.

In the report of one of the exploring expeditions in the northern seas, it is said that, on a certain occasion, the crew were greatly elated with signs of a thaw, the mercury having risen to 40° below zero. Having been subject to a much intenser degree of cold, they felt, as did the boy, whose father had administered to him a severe flagellation, "greatly refreshed."

It may well be doubted whether the people of Maine suffer more from cold than do they of Virginia.

Touching the weather, it is much as it is with the tariff—all that the people want is to have the line of governmental policy settled—to know what can be depended upon. So of the weather. The down-easter, knowing that

from the middle of November to the middle of April the ground is to be covered with snow, and uninterrupted cold weather is to prevail, he wraps his fur coat about him, inflates his lungs, braces up his nerves, and thinks no more of the cold than the "rugged Russian bear."

The dweller in the Old Dominion, on the other hand, regarding warm weather as the rule, and cold as the exception, makes no provision for the latter. But when the northern blasts come, as come they will, he wraps his fig-leaf coat about him, and seeks shelter within the enclosure of his airy mansion, so constructed as to exclude heat rather than cold.

Then there is another consideration which greatly favors the dwellers in cold latitudes. While the earth is covered with snow, there is but little evaporation. The atmosphere is consequently dry, and storms are unfrequent. Where there is no snow, it is far otherwise. The whole surface being covered with water, evaporation is rapid, and the atmosphere is surcharged with vapor, and the peculiar chillings which characterize a March wind in New-England, prevail during the winter months.

Agriculturally, the snowy region has many advantages. It is better for the *soil* to be covered during the winter months. That there is any *virtue* in the remark, "snow is the poor man's manure," I don't believe' But certain it is, that grasses and grains are benefited by being thus protected.

Snow is an imperfect conductor of caloric, consequently the surface being protected from the cold of mid-winter, the heat from within dissolves the frost, and when the snow disappears in spring, the frost is gone from the soil. It is not uncommon to find the grass growing before the snow is off. Fields are ready for plowing soon after they are bare; so that stock will live, and seed may be gotten into the ground nearly as soon in Vermont as in Connecticut. Then, for doing business, the snowy regions have greatly the advantage. Lumbering is with great difficulty carried on where there is no snow. The lumber lands in Maryland and Virginia would be worth twice as much as they now are with northern winters for the removal of the lumber.

But I will say no more lest I get up an emigration fever towards Greenland.

R. B. H.

STATISTICS OF MUSCULAR POWER.—Man has the power of imitating every motion but that of flight. To effect this he has, in maturity and health, 60 bones in his head, 60 in his thighs and legs, 62 in his arms and hands, and 67 in his trunk. He has also 434 muscles. His heart makes 64 pulsations in a minute; and, therefore, 3,740 in an hour, 92,160 in a day. There are, also, three complete circulations of his blood in the short space of an hour. In respect to the comparative speed of animated beings, and of impelled bodies, it may be remarked that size and construction seem to have little influence, nor has comparative strength, though one body giving any quantity of motion to another is said to lose so much of its own. The sloth is by no means a small animal, and yet it can travel only fifty paces a day; a worm crawls only five inches in fifty seconds, but a lady-bird can fly twenty million times its own length in less than an hour. An elk can run a mile and a half in seven minutes; an antelope, a mile in a minute; the wild mule of Tartary has a speed even greater than that; an eagle can fly eighteen leagues in an hour; a Canary falcon can even reach 250 leagues in the short space of sixteen hours. A violent wind travels sixty miles in an hour; sound, 1,142 English feet in a second.

THE INTERNAL TRANSPORTATION AND TRAVEL—ITS MAGNITUDE AS AN INTEREST.

FEW persons, who have not taken the trouble to examine the statistics, and to submit the subject to the scrutiny of figures, have a correct appreciation of the magnitude of the interest engaged in conducting the internal trade and travel of this wide-spread nation. We have heard much talk of the cotton interest, the sugar interest, the farming interest, the manufacturing interest, and various other interests, but they are all small compared with this vast and rapidly-augmenting transportation interest. It is the growth of comparatively few years, but it has attained herculean proportions. If we begin the comparison by ascertaining the investment of capital, we find internal transportation about, if not at the head of the list. We estimate the capital invested in this department of industry at *one thousand millions of dollars.* It is divided thus:

Railroads and their machinery, - - -	$600,000,000
Canals, - - - - - - - -	100,000,000
Steamboats, - - - - - - - -	70,000,000
Vessels in the coasting trade, - - -	130,000,000
Turnpikes, stages, wagons, and canal boats, -	100,000,000
	$1,000,000,000

The value of all the improved farms in the cotton-growing States of Louisiana, Texas, Arkansas, Mississippi, Alabama, Georgia, South Carolina, Florida, and Tennessee, in the year 1850, amounted to about $512,000,000. The capital invested in growing cotton is therefore much less than that invested in internal transportation. It will be perceived that we do not include in the comparison the value of the slaves employed in producing the cotton. By a similar course of calculation, it may be shown that the capital invested in the agents of transportation exceeds that of any *one* interest of production taken separately. The fact is, that it is nearly one-third the whole value of all the farms in the United States; the aggregate value of all the farms in the Union being thirty-five millions of dollars.

The gross annual product of all the agencies for internal transportation we estimate at $120,000,000, which exceeds the whole cotton crop of last year by about twenty millions of dollars. It is more than double the annual product of gold in California, it is nearly double the value of all our agricultural exports for the last year, and ten times the amount of exports of manufactured articles.

One of the great advantages conferred on the country by this vast interest is the employment it affords to productive industry in the constant and increasing demand created for machinery of transport. Thus, on the fifteen thousand miles of railroad now in operation, there are in use six thousand locomotives, and fifteen hundred steam engines are in use on boats.

The engines on boats cost - - - - -	$12,000,000
The locomotives cost - - - - -	54,000,000
Total, - - - - -	$66,000,000
It will require for renewals each year—	
Locomotives, - - - - - - - -	600
Locomotives for increase of business, - - -	60
Total locomotives to be built per year, - - -	660

These locomotives will cost $5,940,000. It will require 165 new engines every year for steamboats, which will cost $1,320,000, making together $7,260,000 as the amount of the annual demand for steamboat engines and locomotives.

There are on the fifteen thousand miles of railroad about one million, seven hundred and twenty-five thousand tons of iron rails, etc. We estimate that these rails must be renewed in fifteen years. There will be required then 115,000 tons of railroad iron each year for renewals, which, at $60 per ton, makes $6,900,000.

We also estimate that there will, for the next twenty years, be 1200 miles of railroad constructed each year, that will require annually 1,380,000 tons of iron rails, costing $8,580,000, and 400 locomotives that will cost $3,600,000. These sums make an aggregate of $26,040,000, that must be expended each year merely for the renewal and repairs of iron rails and engines required to effect the transportation of produce, and the travel of passengers on railroads and steamboats. This is entirely exclusive of the ordinary repairs on the hulls of the steamers, and the wood and earth work of the railroads, which annually amounts to a very large sum.—*Louisville Journal.*

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

TASTE IN RURAL HOMES—ITS INFLUENCE.

MESSRS. EDITORS:—Home is the spot where our warmest affections center. What place is more endeared to us, or to what do our thoughts more often revert, amid the bustle and hurry of life, or even amid the infirmities of age, than the place of our childish sports. The influence which home exerts upon character and circumstances in every period of life is great. It often gives shape to our character, and materially increases or diminishes our happiness. Home influences, that are exerted in childhood, frequently give direction to all subsequent life. Among men we find very different views respecting the beauties of nature and of art, and, consequently, we see a great diversity in their practice. One has but little appreciation of beauty, The tasteful cottage, ornamented with walks, and flowers, and shrubbery, hardly secures a passing glance. Utility is his watch-word. Gold glitters in his eyes, and all the refinements of social life are sacrificed for its accumulation. He may have a dwelling, convenient in size perhaps, but destitute, both externally and internally, of almost every thing that can gratify a refined taste. There it stands, like a pyramid in the desert, without a tree to ward off the rays of the sun, or to break the force of the storm; without a shrub or flower to please the eye. The thistle and the noxious weed adorn the door-yard, if there be one, and often the dwarf elder, and the brier, take the place of the rose, the snowdrop, and the honeysuckle. And if the swinish multitude are not actually permitted to revel around the door, the sty may be in close proximity, and its exhilarating odors may compensate for the absence of the rose and the sweet-brier. The neat, gravel walk, with its shrubbery and flowers, are too expensive. They bring no gold to fill his coffers, and, therefore, possess no attractions.

And the interior of such a dwelling is too often a counterpart to its exterior. For the sake of gain, convenience for performing domestic business may, to some extent, be consulted, but taste and elegance are utter strangers.

The naked walls, without paint or paper, glare out upon the visitor; the floor, uncarpeted, exhibits but little neatness, and the furniture is in keeping; the centre-table, covered with books and periodicals, of a character calculated to improve the understanding, correct the judgment, and form the taste, is not there. A few antiquated books, of ancestral inheritance, a borrowed novel, with the county paper, compose the literature of their rising family. All things look to the great object of the occupants—the acquisition of money. The little elegances and conveniences that render home delightful are too expensive. They can not have them, though their interest, from hundreds, and, perhaps, thousands of dollars, secured by bond or mortgage, is annually increased by a large per-centage.

What a contrast is this to the neatly constructed cottage, tastefully adorned by the hands of art. Seen in the distance, it looks out from the graceful shade of the elm or the maple; and thus situated, its symmetrical structure, neatly painted, with its green blinds, catches the eye, and calls forth the admiration of the passing traveler. It gives beauty to the landscape around. It is *not* a spot "where *distance* lends enchantment" merely, for a nearer survey serves only to heighten the emotions already excited in the mind. The minuter shades of beauty unite their attractions with those more extended, and the result is, a keener relish is excited. The avenue, tastefully adorned with flowers of varied beauty; the lawn, interspersed with shrubs and evergreens; and the portico, where the honeysuckle and the climbing rose are trained gracefully over the light trellis—all contribute to inspire kindly feelings.

Enter the cottage, and we find the interior in keeping with the appearance without. Neatness and order meet the eye in every department. Happiness appears to have fixed her residence here. The books of the well-stored library, and the most useful periodicals of the day, occupy the leisure moments of its inmates, while often the sweet tones of musical instruments, with the sweeter tones of a human voice, soothe the agitated feelings, and soften the rugged asperities of life.

Such contrasts are every where apparent in our rural districts. There are those who despise every thing like beauty or rural taste. They look upon it as the offspring of weak and effeminate minds, and their dwellings are in striking coincidence with their sentiments. They may, perhaps, see beauty in the golden harvest, because it promises to increase their wealth; or they may admire their flocks and herds for the same reason. But the tasteful and the ornamental they leave for the ignorant dupe to admire—despising the beauties that God hath scattered around us in so rich abundance.

The question is often asked with a sneer, to what profit is all this array of flowers, and shrubs, and walks, and shade-trees? *They* can eat, and drink, and sleep quietly without them. And so can the brute; and the swine, or the ox, if they could gain access to such a scene, would soon render it all deformity and desolation again. But, still, these things exert a mighty influence upon men. They give rise to actions and states of mind that go far, not only to shape our present and future condition, but to influence the community. Silently they tell upon society. As the mind acts on every thing around it, so a reflex influence is exerted upon it, which gives shape and coloring to future life. What, then, *is* the influence that a correct taste, manifested in connection with the endeared spot called home, will exert? Objects that act upon the mind, tend to bring it into sympathy with them. They impart, in some degree, their own character; they leave the impress of themselves. Where all is deformity and disorder without and within a

dwelling, no wonder if we see character and actions corresponding; no wonder if we hear the profane oath, the vulgar jeer, and witness manners that are rude and coarse. All the objects around tend to foster these, rather than to elevate or refine the feelings. In the absence of all that is chaste and beautiful, we must expect coarseness and vulgarity. There is nothing in the objects around them to restrain the ungovernable passions of our nature, or to soften the asperities of an uncultivated mind.

But the beauties created by a refined taste, tend to produce the opposite of all this. True, the depravity of our natures may influence a person to break through all restraint, and to set at defiance every influence. But this does not disprove the legitimate effect of the influence in question. The beautiful will impart its character as well as the rude; and, under its power, what is coarse and vulgar will be held in check, and the delicate and refined be invigorated. In the calm moments of reflection, the mind perceives that the brutal and angry passions are intruders amid scenes sacred to refinement; that coarseness and vulgarity are rendered more hideous and deformed when surrounded by the beautiful and sublime. You may often judge the character of the inmates of a cottage by the scenery around. Where neatness, and order, and taste reign without, you may expect refinement and intelligence within. Even the child that meets you will exhibit a disposition moulded by the influences around him, and the stranger may expect civility and a hospitable welcome within. "The manners of the roughest clown will be somewhat subdued, as he enters the threshold erected and furnished by a refined taste."

It may be said, that the time spent in adorning our homes, and thus rendering them pleasant, tends to foster habits of idleness, and to the neglect of more important business. But such assertions are generally false. A cultivated taste is more generally the ally of industry. Do we find the inmates of a tastefully-adorned cottage among the idle, or the profligate; among tavern-haunters and gamblers, or the inmates of a poor-house? The reverse is true. And if the idle and intemperate would spend the time they squander, and the money they worse than waste, in pampering their appetites and lusts, in efforts to render their homes attractive and happy, they might bless their families with many comforts, and many sources of pleasure of which they are now destitute, and these would bind them more closely in affection, and make them and the community happier. Or let the avaricious miser spend but a part of the interest of his wealth in thus cultivating in the minds of his offspring a correct feeling and taste, he might do society a favor, and, perhaps, save his children from forming tastes and habits that shall only fit them to curse his memory, and squander his hard-earned treasures, when he shall be silent in the grave. The man of cultivated taste employs his *leisure* moments in adorning his dwelling, and thus secures his object without encroaching upon the time demanded for more substantial employment; while the fault-finder employs these moments in sleep, or idleness, or gossip with kindred minds, or in slandering the neighbor whom he envies; and thus, while his business thrives, his cottage and garden assume an air of neatness and comfort. His children, instead of being left to patrol the streets in search of company or mischief, listening to the vulgar ribaldry and profaneness of uneducated minds, or mingling in the angry broils that disturb the quiet, are taught to find enjoyment amid the beauties with which they are surrounded, or to engage in the active labor of adorning their home, and rendering it happy. The trees and flowers, cultivated with their own hands, become as it were the companions of their childhood, and an attach-

ment is thus often formed for home, that saves them from the vortex of dissipation, and checks the roving, restless disposition often exhibited in youth. A taste is thus formed, and habits of industry, that are the precursors of success in future. It costs but little time or money to make a rural home inviting. I do not argue for expensive and costly adornments. Many are the flowers and shrubs, indigenous to our native soil, that surpass in beauty many exotics. And these may be easily transferred to ornament our residence. Where other circumstances are in equal ratio, it is believed that the man of taste will be the most prosperous and happy man. And the family brought up under such an influence, will be the most orderly, useful, and industrious members of society. A writer has well remarked, "when I see the new married couple with no object about them tasteful, by a kind of instinct, I mark them out for ultimate poverty."

Let a correct taste be diffused through the community, and what a transformation would the landscape present. The unsightly deformities of nature would be concealed, or moulded into shape. The hill-top would be leveled, or crowned with beauty; the morass be changed into the luxuriant meadow, and the unsightly avenue shaped to romantic beauty. And who would say that society would not be happier? In what neighborhood would you wish to fix your residence; where there is an absence of all that can delight the eye, where all was deformity and disorder, or amid the abodes of refinement and taste, however lowly.

What, then, is the duty of parents in relation to this subject? Children are generally pleased with the beautiful in nature; and in the forming period of life, it needs but little effort to give a right direction in this respect to their feelings and pursuits. The effort of the parent seems only seconding nature in her struggles for development. But such I deem is not the part of wisdom. Among other preventives against vice and dissipation, against idleness and profligacy, against boorishness and vulgarity of manners, let the parent early inculcate in the mind of his child a love of the beautiful and sublime. Let him train him up to habits of order, neatness, and industry, and early cultivate the feeling that he must lay the world under obligation to him, because he render the little world about him, the sphere in which he moves, more happy, more fertile, and more beautiful.

HORTENSIO.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

THE IMPORTANCE OF FARM REGISTERS AND FARM ACCOUNTS.

MESSRS. EDITORS:—Perhaps there is nothing of so much importance, that is so much neglected by the farmer, as the practice of keeping a diary, or farm register, and a strict account of all his receipts and expenditures. How many farmers are there within the circle of your acquaintance, who can tell how much money they have received during the year, and for what; whether the profits, if any, have been derived from their corn, hay, or wheat, from their horses, cattle, or hogs, and upon which they have sustained a loss; whether their crops have been worked in due season, and with a judicious economy in every particular; how much corn, or its equivalent, it will take to produce a pound of beef or pork, and what method of feeding will give the greatest return. I fear that, upon examination, the number found who

could answer these questions correctly would be few indeed. And why is it so? One reason is, the careless and shiftless manner in which farmers generally manage every thing connected with farm work. What would you say of the merchant who followed his business in such a manner, some branches of his business being attended with a certain loss, and unknown to him, solely because he neglected to keep a strict account upon each branch? You would say, that he would be obliged to sell out, sooner or later, to save the sheriff the trouble. But the merchant, even in our small county towns, deems it indispensable to success in business to keep an accurate account of every transaction. Then let the farmer adopt such a course. Let him keep an accurate account of his receipts and expenditures, profit and loss, upon each item, and every branch of his business, or with every field. Let him carry a small book in his pocket, and daily note down the various items of work for each day, together with such practical suggestions as may occur to his mind; and, my word for it, he will find himself much the gainer in a pecuniary point of view, while he secures, also, much gratification and pleasure in a review of his labor from year to year. The farmer would then know at a glance from what crops, what class of animals, and what course of management, he receives the greatest profits, and on what he sustains loss. Would not this be a knowledge of the greatest benefit in determining his course for the future? Let this practice become general, and the benefits arising from it would soon be made manifest in the improved condition of the farming community. They would be seen in the greater interest which would be awakened in those who now follow in the same old, beaten paths which their fathers trod, and who keep no accounts except such as they record with chalk. We should then see a desire on the part of farmers to possess a "little farm, well tilled," rather than to add acre upon acre to their already large estate, which has been rendered unproductive by shallow plowing, scanty manuring, and a hurried cultivation. We should then see agriculture taking that stand which its merits demand. J. W. A.

No. New-Salem, Mass.

TAKE CARE OF YOUR FRUIT.

Now is the time—and the caution would have been better a month earlier—to look to your trees. The enemy is upon you who is as deadly as the Philistines. If you find him and secure him, well; if not, you will probably have occasion to regret the failure hereafter.

Prof. Mapes gives directions to pour boiling water on the lower part of the trunk of peach trees, a quantity sufficient to cook the worm, doing no harm to the tree. Three gallons of boiling water, he says, may be used around each tree.

In manuring trees, apply the manure, not around the trunk, but nearly under the extremities of the branches. The roots extend about as far under ground, generally, as do the branches above it, though, of course, the ratio is not exact nor uniform, but modified by the soils, moisture, &c., as well as by the nature of the tree.

We have before stated that it is our belief that peach trees do better if not transplanted, but allowed to stand where they came up. We have known such trees, and only such, bear fruit well for more than twenty years. Others attach no importance to this fact. But we should like to hear of transplanted peach trees bearing good crops for that length of time. Such have not come under our observation.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

FARMING IN EAST TENNESSEE—GOOD CORN-BREAD.

DEAR EDITORS:—After a drought of over twelve months, a fine, seasonable rain has this week fallen. All nature is now enlivened, invigorated, and revived. Wheat, clover, timothy, and grazing grounds, are spreading their lovely green mats to the eye, promising a rich harvest. Our farmers have had every possible advantage during the winter, to early pitch a crop this spring; and most of us are at least one month in advance of our usual time of readiness for planting. Many are done ploughing, and are waiting the proper time to plant. The drought has been anomalous; and many of our old weather-astrologers say that the rainy season will now pay all it owes us. But, in the face of this prophecy, our hope is, that such will be the order of providence, that an abundance of the good things of the land will be gathered in due time; for the effect of the drought has been upon the soil to mellow and pulverize it. The dry winter, which has been cold, has done much in this important particular; and, indeed, something very uncommon or unnatural must take place, or a beautiful crop of all kinds must result. But *tempus omnia revelat*. Then, if time reveals all things, without time, all things cannot be revealed. So, time only can reveal the certainty of our coming crop-season. But when I set down to write, I thought to have been able to draft something worthy of your columns; but it is said,

"————————come in spite
Of their blundering, *will* ignorance write."

So it is with me; but, then, an excuse prompts me that

"A little nonsense now and then,
Is relished by the best of men."

So, if I can hope to entertain you personally for a moment, I shall be amply requited, without humiliating your very valuable periodical with its publication. And, now, if your kindness will in any way justify the preliminary, I will take up my experience in furnishing your many agricultural readers with what I believe to be indispensable in furnishing for the table a good, palatable, nice, luxurious necessary for that department—to wit: CORN-BREAD. This article of food stands in the West at least at the head of our list of necessaries; and it is but little trouble to make it, likewise a luxury. I have, as your readers no doubt all have, before now, seen the paper account of what I may say, and I can only insist upon a trial; and if, upon a trial, the value of the method is not acknowledged, then it will be that I shall be for once deceived. Your readers all know that to have good, palatable food on the table, the art and mystery lies not altogether in the cookery. This is merely one part of the business, that must be well understood, and properly attended to; and, generally, our good housewives are adepts in this method without our aid. Then it is the business of the male department to see that the article for cookery is furnished in the pantry, clean, sweet, and nice, unmixed with any foreign matter, and prepared in the proper manner. Well, what of corn-bread? Some, I know, prefer old Virginia ash-cakes, as we are pleased to call them, and do not intend invidiousness when we apply the term either, for they are good. So are our johnny-cakes, hoe-cakes, dodgers, etc. The peculiar manner of baking to taste, I do not wish to talk about; but the way and manner of furnishing the meal for the cook is the

object of my writing; and this, as I said, is the result of a trial upon my former reading. And what is the secret? It is this: Gather the corn in the fall, of course, when it become ripe, and put up dry *in the shuck*—shuck and shell as needed to grind for use—and by this means alone you will secure bread with all the glutinous, saccharine qualities of *new* corn-bread, at all seasons of the year. I suppose it need not be insisted that new corn-bread is nicer and more palatable than old, for this is not debatable. The shuck, if dry, serves as a preserver of the corn in its native, sweet state. Shuck it, and no apartment will keep it in like condition. The atmosphere seems to extract from the grain the qualities alluded to, and leave it dry, brittle, and tasteless, when made into meal and baked. I hope, and, in charity, expect, that no one will trifle with this simple suggestion of mine, until he shall, as I have done, found his opinion on actual experiment; for, in my acquaintance, our farmers generally, and almost universally, shuck their corn, and crib it in the ear in bulk, after being so shucked. This, for stock-feeding, can yet be done, but for table use, it should not be so done. Will any of your readers, who have not, try the plan and report; and, in the event of disagreement, suggest some other and better mode of harvesting and preserving corn for bread. The one now used is certainly admitted by all as objectionable, in many particulars, which I need not take time to enumerate,

Very respectfully, A. L. B.

Mill Bend, Ten., March 15, 1855.

NASCENT MANURES.

This matter of mineral and vegetable manures, their real value, proper use, etc., can scarcely be overrated in its importance.

We find a learned essay on this subject from Dr. Stewart, of Baltimore, in the *American Farmer;* and though we are not quite ready to endorse all the opinions of learned chemists on this subject, we think the following very valuable. The appropriation of simple gases, which these gentlemen deny, is not yet disproved in our judgment; but we hope soon to have the whole story from them, or one amply qualified to treat the subject, namely, the writer of the following:

"Reasoning from analogy, all manures must be presented to the plant in the nascent state, in order to their assimilation; but a safer proposition, perhaps, would be, that many elements of plants, while they exist in their normal or natural condition, are as perfectly unassimilable, or as incapable of affording nourishment to them, as they are to animals.

A hundred illustrations of this law will at once occur to every intelligent mind; and the facility with which even inorganic compounds unite while in the nascent form, is familiar to all. Every molecule of matter, whether composed of compound, or simple atoms, seems to have a form of its own, and until it has assumed this form, or state of aggregation, it is in the nascent state, or in an allotropic condition.

While in this nascent state, its tendency to unite with other bodies which have an affinity for it, is wonderfully increased; indeed, it is often the only condition in which two substances will combine. The celebrated Faraday attached so much importance to this nascent, as contrasted with the normal condition, that a few months since he expressed the opinion that ozone is merely oxygen in the nascent, or allotropic condition.

Lime and magnesia, when recently slacked, are capable of uniting more freely with other substances; if, however, the slacked lime or magnesia is kept for a long time, even although perfectly excluded from the air, it will gradually assume the form of granules, and subsequently these molecules will form crystals, or the lowest order of organisms; and these organisms seem to possess a degree of resistance to external force analogous to the resistance of the higher organisms; indeed, the more perfect crystals of the same substance, and in the same solution, will grow and become more perfect, at the expense of those which are irregular. Upon this principle, the imperfect crystals may be said to be approximating to the allotropic condition, or nascent state, while the perfect crystal is in the normal condition.

It may be said that extent of surface is one of the causes of this, and a better illustration is sand, or quartz, which is perfectly insoluble in its natural or normal condition, however fine the powder, even in some of the strongest acids. But sand or silica is frequently found in the nascent condition, and then it dissolves readily in water; moreover, it can be kept in this condition for years; but if heated to the temperature of 260° it assumes its normal condition, and becomes perfectly insoluble even in acids; whereas before, it would dissolve in acids, alkalies, or pure water.

Lime and magnesia, while in the caustic state, are capable of converting sand into soluble silica; and this is perhaps one of the good effects of liming, especially when we consider the remarkable influence that soluble silica exerts in absorbing ammonia from the atmosphere, and also from ammoniacal manures. We may also account thus for the crumbling of stable walls, the moist condition of old walls, and especially those that are exposed to ammoniacal exhalations. Moreover, we have a plausible mode of accounting for nitre beds, and the remarkable value of old plaster; also the purifying influence of 'white-washing,' if it is done with caustic lime, and not with whiting or carbonate of lime. Lime, while caustic and moist, in contact with sand, converts a small part of the surface of the grains of sand from the insoluble to the soluble silica; and this is the reason why caustic lime is necessary to the formation of good mortar, as it is not (as is almost universally supposed) a mere mechanical mixture of lime and sand, neither is it grains of sand cemented together by the induration of lime, but the actual solution of the surface of the grains of sand produces a still more intimate union.

Well, this soluble silica gradually absorbs from the atmosphere the ammonia, for which it has a remarkable affinity; and as ammonia is the vehicle of poisonous exhalations of disease, as well as the perfume of flowers, these exhalations are so concentrated upon the walls of hospitals, that it sometimes becomes necessary to remove the plastering, in order to get rid of Erysipelas and other diseases.

Nearly, or quite all of the nitric acid of commerce, was no doubt originally derived from ammonia, in the order above referred to; for, if my theory, as above stated, is admitted, then, every authority will sustain me in saying that old plaster contains ammonia, and this ammonia is converted into nitric acid on the wall. Salts of nitric acid can be seen by any one on the surface of old walls. Moreover, the leachings of old walls have frequently been used in the manufacture of gunpowder, and old plaster always enters into the composition of artificial nitre beds.

It will be readily admitted that silica can never enter the rootlet of a plant, however fine the powder, unless it is in solution, and that the finest powder of sand or silica differs as much in solubility from nascent silica, as sand differs from sugar. The importance, then, of soluble silica to grasses and

wheat, and especially to corn; and, indeed, its value as manure has long been recognised; (see Liebig's Chemistry, Am. Ed. 1841, p. 200.)

It was first supposed that potash was the vehicle for its conveyance to every part of the plant; but the modern idea is, that ammonia is the main instrument of its conveyance; certain it is, that it loses its base at the instant of its deposition on the stem; and if potash were the base, then it would be necessary that the potash be carried back again to the earth, and the plant would be constantly embarrassed by the excrementitious matter; whereas, the ammonia being volatile, evaporates, and leaves the glassy coating, or element of strength, on the surface of the stem. Thus, it is found that more ammonia is actually exhaled from plants than we ever give them in the form of manure; and it is strongly suspected that soluble silica is really the manure, while ammonia is merely the vehicle for the conveyance of soluble silica through the plant.

When the carcass of an animal falls in a field, the luxuriant grass or grain 'falls,' on account of the absence of the relative amount of soluble silica, or the excess of ammonia uses up at once all of this necessary element that is available.

Two years since, I manured two lands in the centre of my oats field, the one with Peruvian Guano, and the other with soluble silica, leaving a land unmanured between. The proportion of straw on the guanoed land was very much increased; but last summer, the same field was in wheat, and a corresponding diminution in the proportion of straw was noticed on the land that had been guanoed two years since; and what is more remarkable, the lands on each side of the guanoed land, averaged 746 lbs. more of wheat straw per acre, although no manure of any kind had been applied to either since it was in oats. Whereas, the silicated land not only produced more straw than either of its unmanured neighbors, but also excelled the guanoed land in wheat nearly three bushels per acre, and ripened earlier than any other part of the field.

The difference between the silicated land and the unmanured, averaged 1966 lbs., while it also produced nine and one tenth bushels of wheat more than the adjoining unmanured lands.

A land of my oats field of last summer, exhibited the same increase in the weight of the straw, although no silicates have been applied since it was in corn two years since.

But the most remarkable result was obtained in my corn field of this year, where the corn on the silicated portion averaged 93 lbs. per shock, while the part unmanured only weighed 42 lbs. per shock; each shock represented 64 hills of corn, and the average of 31 shocks was taken. This manure was applied in my presence, and I personally gathered and weighed the produce of each separate shock in the field, with my own hands; therefore, I can vouch for the correctness of the results. And now, can we not account for the well known and remarkable efficacy of dissolved bones on this principle, when compared with normal phosphate of lime, whether it be in the form of bone-ash, ground bones, or phosphatic guano!

Bones have been used with profit, at the rate of $20 to $60 per acre; and it has been repeatedly demonstrated that one bushel of dissolved bones, for immediate effect, is equal to five times as much ground bones; in other words, that one pound of nascent or soluble phosphate of lime, is worth more than five pounds of normal or natural phosphate of lime, or bone earth. It will be admitted that every acre of land on the face of the earth, contains from one-tenth of one, to four per cent. of lime and magnesia; and of only

one-tenth of one per cent. at the depth of cultivation, even then, each acre must contain 1500 to 2000 lbs. of lime and magnesia. Now, it is manifest if 10, or even 30 bushels of dissolved bones were applied to an acre, the first rain would convert all of the free phosphoric acid, or bi-phosphates that they contain, into neutral nascent sub-phosphates; and it is therefore nascent sub-phosphate of time that is taken up and assimilated by the plant. Thus, we are enabled to account for the wonderful effects of what are called in commerce, bi-phosphates, which really contain very little free phosphoric acid, but all of the phosphoric acid exists as natural nascent phosphate of lime.

The fact is, that dissolved bones are unmanageable as a manure in this country, [in England, bi-phosphates are applied in solution,] until reduced from a fluid to the form of a powder, by the means of ivory black, guano, or some less valuable diluent; and the universal distribution of carbonates of lime, etc., in these, converts nearly all of the bi-phosphates into neutral nascent phosphates or sub-phosphates. During the past summer I have been experimenting on two separate fields, with four of these compounds, two of which were made in New-York, and two in Baltimore. The most remarkable results were obained from experiments made upon a few hills of corn. But I will confine my statement to two series, where whole rows of shocks were compared with contiguous unmanured rows; the average of 23 shocks, each shock representing 64 hills, exhibited a difference of about 25 per cent.; or the manured weighed 56 lbs,, while the unmanured weighed 42 lbs. per shock; and these manures were applied in my presence, at the rate of ten bushels per acre broadcast; and I gathered and weighed the corn in the field myself.

Now, it is most probable that no atom of free phosphoric acid, or bi-phosphate of lime, ever enters the rootlet of a plant without destroying it; and, having proved that a solution of bones would necessarily become precipitated in contact with any soil, we are driven to the conclusion that this precipitate or nascent sub-phosphate is *the* valuable manure; and we take it for granted that it will preserve the nascent form for some time in moist situations, as we know that moist oxide of iron will continue to preserve this form, as the antidote for arsenic, for weeks together. Ultimately, however, it also loses the nascent and assumes the normal form, and becomes so insoluble, that five times the dose is required, in order to afford the soluble material for the same proportion of arsenic. Thus it is with phosphatic guanoes and bone dust; none of them are absolutely insoluble in pure water, and when thus dissolved as sub-phosphates, they are converted into the nascent form, and more readily re-dissolved than before their solution.

The contact of a piece of wood or string has been known to hasten the solubility of the most insoluble substances; for instance, the inner part of the metallic worm of a still, opposite a wooden support has been known to dissolve in the distilled water passing through it, and the same remark is made with regard to hydrant pipes; the normal condition of insoluble bodies is then disturbed, and the allotropic or nascent condition produced, by contact with vegetable substances in a state of change; this, then, may account for the influence of organic manures, and indicates the philosophy of the modern plan of manuring in Europe, which is by hauling out the manure on the field, load by load, as it is generated, instead of permitting it to ferment in heaps in the stable-yard. Now, query, would it not be still better to stratify it with powder of feldspar, phosphorite, or phosphatic guano, and concentrate this disturbing force of fermentation upon the elements, which, when reduced to the nascent state, are worth more than the one or two per cent. of alkalies, etc., in the manure itself.

It is still a question with physiologists whether nitrogen is ever assimilated by plants, much less by animals, in its normal condition; and it is a curious fact, that both the plant and animal may starve when fed on carbonaceous food exclusively, although both are bathed in an atmosphere containing four-fifths of nitrogen, which is perfectly useless to both, because not presented in the nascent form.

DAVID STEWART, M. D.,
Chemist of Maryland State Ag. Soc'y.

Baltimore, Jan. 24th, 1855.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

CATTLE AND THE PROSPECTS.

MESSRS. EDITORS:—In this section of the country, I am confident that beef-cattle and milch-cows will be high for the coming season. Hay is, and has been, very high with us. All the straw, and rough fodder of every kind, has been gathered up for the cattle and horses. Straw, even, has demanded, and still demands, a high price throughout this section of country. In former years, we never used to think of selling straw at a high price, unless in the bundle; and now it readily commands $7 per ton; hay, at from $12 to $16 and $20; and corn-fodder at a like rate. Scarcity causes this great demand. Men have large numbers of cattle on hand, and must have something to keep them through the winter; and, rather than let them starve, they are willing to pay high prices for their stores. Will this not tend, then, to make beef high? Certainly; though it is high enough now. Good, fat, working oxen, weighing from thirty-four to thirty-six hundred, have sold here lately for $200 per pair—showing that our home market is about as good as your city markets. I think that the present and prospective demand for beef is, and will be, good, considering that the forces in the Crimea will have to be fed—not only the English and French troops, but also the Russian. Some of our own markets have not been very well supplied with beef during the last year. This is not strange, when we consider that, for the last year or two, there has not been much feed for cattle to fatten on; hence the complaint that the New-York market is over-burdened with poor beef. I do not see that the prospect is likely to be any better for the year to come. Cattle, in different parts of the country, are now in a poor condition, and it will take some time for them to get fat; and, more than that, they are not very numerous any where in the United States. Butter is high, and beef is high. What is the cause of it? Scarcity of the articles. The milch-cows have been either "dried up," or sold in consequence of poor feed. Beef-cattle have been mostly picked up, though there are yet thousands of them left, with thousands of hungry people to eat them. Just about here, I can not say that we have many fat cattle to sell, nor a great number of milch-cows, though we think that our country is a very fair cattle region, comparing favorably with most other counties.

Raising cattle is good business, but producing hay is a better business, at present prices. A cow, or an ox, will almost consume hay enough, during a long winter, to buy its own body. Farmers could not get along were it not for the fact that they "work in" a great deal of coarse stores, including corn-stalks, straw, etc. Butter, it is true, is high; but all the cattle kind do not give milk, but store away fodder, for which the farmer, many times, does

not receive an equivalent. Should we all raise hay and no cattle, the result would be, no market for our fodder.

From private Western correspondence, I learn that cattle are suffering for want of food in many parts of Ohio. This is to be regretted, since that state is a great cheese and butter-producing country. I am of opinion that beef and butter will be high for the coming season, though I may be wide of a correct calculation.

The prospects of the farmer, otherwise considered for the coming year, are, indeed, quite flattering—that is, if he can raise any thing to sell. His mistake last season was, that, in many instances, he had nothing to dispose of—no wheat, not many oats, nor a great supply of corn and potatoes.

The peach-buds here seem to be dead. I should think that they had received their death-blow. The inside of the bud is black, with no indications of life. Some of the last year's shoots bear evidence of having been badly bitten by the frost. Thermometer stood here at from 25° to 31½° below zero.

Very respectfully, W. TAPPAN.

Baldwinsville, N. Y., March 20, 1855.]

PLOUGHING—AMOUNT OF TRAVEL.

THE amount of work required on a given surface varies, of course, with the condition of the soil. Certain parts of the work may, however, be accurately calculated. The number of furrows, of a given width, the length of furrow traveled within given dimensions, etc., can be told by an ordinary schoolboy. In the *Soil of the South*, a table is given, showing the space traveled in ploughing an acre, with a given width for the furrow. These calculations are approximations to the truth, but not quite accurate. In ploughing a field 500 feet square, more than 500 feet must be "traveled" in by the team, or even by the ploughman. The team must travel at least ten feet at each end, beyond the termination of the furrow. Taking this estimate as accurate, and supposing the field to be square, (for, with the shape of the field, the number of furrows, and the "space traveled," will be materially changed,) and the breadth of the furrow seven inches, the distance traveled by the team in ploughing one acre will be about 15⅔ miles, instead of 14½, as in the table. With a "furrow slice 14 inches," the travel will not be, of course, "seven miles," as given in the table, but something more than 7½, and so on. The calculations, thus corrected, may be of some interest. The table as given by our Southern friends is as follows:

Breadth of furrow slice,	Space traveled in ploughing an acre.
7 inches.	14⅓ miles.
8 "	12¼ "
9 "	11 "
10 "	9 9/10 "
11 "	9 "
12 "	8½ "
13 "	7½ "

By this rate of calculation, a furrow once in

2½ feet,	3½ miles.
3 "	2¾ "

HORTICULTURAL.

THE VEGETABLE GARDEN.—The earlier kinds of vegetables ought to be in the ground by this time; and fancy seeds have been started in boxes, or under glass. The warm weather of early May invites you to give them room in the ground.

Currants and gooseberries, if they were not pruned in the fall, as it is well to do, should not be neglected now for a day. Dig up all the sods, grasses, etc., which are about their roots, and give them a slight dressing of manure.

Melons should be sown. Soak the seeds a few hours in water; dig a large hole two feet deep, and three feet in diameter; fill it with good, rich loam and fermented manure, and in this, when finely pulverized, place your seeds at proper distances, allowing for some to come up feebly, or to be destroyed. Then you will have melons. If a cold storm is likely to injure them, shelter them with some kind of covering.

Gardeners tell us that melons are exceptions to the general rule, since their seeds, more than one year old, produce better fruit, and run less to vines than fresher seeds do.

THE FLOWER GARDEN.—Perhaps this is not yet laid out. If so, let us suggest that there are two styles, as we may call them, in one of which, the whole plat is divided into beds of various forms and sizes, separated by walks, of greater or less width; and the other, where the surface is chiefly covered with grass, on which various figures are cut, the grass and sods being removed from them, leaving them, after proper cultivation, in a suitable condition for flowers. These may be of various shapes, and forms, and sizes, including borders along the walks, circles, ellipses, triangles, etc., with mounds of various sizes, and shapes, and heights, and shrubs and evergreens duly interspersed, according to the extent of the grounds, and the character of the surface. The latter style, generally speaking, is more to our taste than the former. There is more of variety in it.

If the flower garden is designed to make a show from the windows, the walks, beds, etc., should run in a line parallel to them. Having a side view, the various rows of flowers will all be visible, while the naked ground will be more sheltered from view.

PLANTING, ETC.—Dahlia-roots, and the like, may now be safely placed in the ground. Give them a light loam, partly vegetable, not too rich, otherwise you will grow large plants rather than flowers.

Very soon it will be time for the smaller seeds. Prepare your grounds by deep spading, removing all the stones and rubbish. Transplant such perennials as require it, dividing those roots that are connected together.

Plant the larger and hardier seeds, but not too deeply. Generally, half an inch of depth is quite enough for the largest.

When the apple-blossoms begin to appear, sow the smaller seeds. These should only have a little sprinkling of very fine earth sifted over them.

If you attempt to cultiuate that splendid plant the Cypress vine, *Ipomæa Quamoclit*, in which nineteen out of twenty fail, first throw the seeds into scalding hot water, or "hot milk," and let them lie till the liquid is cold, or, in other words, for several hours; then bury them half an inch in good soil, and keep them alike from chills and from drought. The seeds may be planted in circles from one to two or three feet in diameter, at a distance of

six to nine inches apart. They should be trained on twine, fastened to short stakes in the circumference of the circle, and led to the top of a central stake about six feet high; or they may be trained over a trellis, forming a screen. If confident of a vigorous growth, the seeds may be a foot or so apart. But be sure to plant the seeds as early as the weather will permit.

Sweet peas may be planted in a similar manner.

DAHLIAS.—W. C. WILSON, Esq., of Baltimore, who has always one of the best private collections of Dahlias in America, writes the *Horticulturist*, (and Mr. Wilson is high authority) as follows:

"The following were the best dahlias in this latitude last season, and some of them were fine the previous year:

1. Reine des Belges.	7. Victorie.	13. Miss Ward.
2. Mrs. Hansard.	8. Cote d' Or.	14. Duchess of Kent.
3. Emperor Maroc.	9. Jonas.	15. Gen. Fauchier.
4. Elegantissima.	10. Elizabeth.	16. Unanimity.
5. Diamant.	11. Miss Wayland.	17. Flora McIvor.
6. Hyppolite.	12. Madam Zahler.	18. Forget me not.

These were the best of 120 varieties. The first five are unequalled as fancy flowers; the 6th, 7th, and 8th, are splendid self-colored. The 7th is remarkable for its full and perfect form; color, a rich crimson maroon."

HOW TO SPROUT OSAGE ORANGE SEED.—The following plan for sprouting Osage Orange seed may be of use, as many are unsuccessful for want of the proper knowledge. In the first place, having procured bright, plump seed, of last year's growth, if possible, put them in a tight vessel, and pour on them *boiling* water, until they are covered. Cover up, and let them stand until milk-warm—keeping them at this temperature, or warmer, until they begin to burst and sprout. Keep a wet cloth on top of the vessel, to prevent the seed from becoming dry. An occasional wetting with warm water will be necessary. A few days after the sprouts begin to make their appearance, the seed should be planted out in beds previously prepared. If the seed is good and properly treated, they will sprout in about two weeks.

ON THE CULTURE OF THE PELARGONIUM.

BY B. MUNN, LANDSCAPE GARDENER, NEW-YORK.

I HAVE seen no really fine geraniums in this country. The reason is obvious, and is this: the plants are not got into a fit state for blooming sufficiently early, and they are forced into bloom by the rapid increase of temperature before they have made and matured their proper growth. The consequence of this is, straggling plants and small flowers.

Let me recommend some amateurs of the flower to try the following plan: At this time (early in February) many have their geraniums in small pots, in which they were placed when cut down last fall. Repot them at once into pots eight or nine inches across, which is large enough to grow a pelargonium in *perfection*, although they may be produced larger in great pots. The compost for them—one-half old hot-bed manure, one-half good loam, with a small portion of sand if the loam is stiff. Put one piece of broken pot over the drain hole, and then, for drainage, put about an inch, or rather more, in depth of lumps of stiff loam as large as walnuts. This is a valuable resource to the roots by-and-by. Then put in the compost, and pot the plant

without breaking the ball of roots, and press down the compost round the sides of the pot, moderately hard, with a potting stick. Water them through, and put them near the glass in a house kept at about 50°. Give but little water until the roots have reached the sides of the pot—they will soon be seen at the drain-hole on turning up the pot. Then increase the temperature very slightly, and syringe the plants every day. As they grow, still keep them near the glass, and pull the shoots down horizontally toward the edges of the pots all around, and secure them to sticks. By degrees, they may, most of them, be brought down nearly to touch the edge. The growth will in another month be rapid, and the shoots and leaves will increase much in size. By the end of March, or early in April, the foliage will be of large size, and hang over and conceal much of the pot, and the plant will be filled up in the centre by growth, which the admission of light there (by the continued perseverance in tying out) has encouraged. Then the plant is formed —its growth vigorous, and it is fit to bloom. But this growth will require to be matured, and to secure perfection in the bloom, the vigor of wood-growth must be stopped. To effect that object, withhold water. Lay the syringe aside, for the present, altogether. Let the plants positively droop in the leaf, from want of water, for a few hours, but not longer, or you will lose much of the lower leaves, which will turn yellow. Some judgment is required in this operation, but it is soon gained by short experience. When this check has been given, supply the plants with water, but in small quantities, comparatively, for a week, giving it at the root and not with the syringe. The plants will immediately "knot" for bloom; and then, but not before, (still keeping them near the glass,) give them manure-water twice a week, and plain water daily, if required, for as soon as the ends of the shoots indicate by their thickness that the bloom-buds are forming, the supply of water must again be liberal as it was at first. The old-fashioned manure-water, made by stirring up a spade full of old hot-bed in a pail of water, *I know* will answer, and you know the strength; but with guano, *and its adulterations*, you may not know, and *may* spoil your plants, although it is very good when properly used. The above manure-water should be used clear, and diluted with water till it is about the color that a crust of burnt bread, two inches square, will give to a glass of water in which it has stood five minutes. The next object is to encourage the growth of the bloom, branches, and buds, but not the foliage, which is best effected by giving water at the root, syringing only now and then to keep off dust, etc., (for if the syringe is much used in this state, the plants get straggling,) and by giving all the air possible. When the flower-buds are just opening, some shade on the glass is necessary. Open canvass, or close, coarse netting, is the best thing I know of, because it does not *altogether* shut out the sun's rays.

I am aware that much must depend on locality and time of year, as to how far the above directions can be carried out. An experienced hand will do best to pot in December for the first set of plants, and in January for those to follow, because he can then stop the shoots (which, by-the-by, he should do, and let the plants break just enough to show the eyes in the small pots *before* potting,) and by this means he will have his plants much larger. But it requires some experience for this very early work to be done well. The *principle*, however, that I wish to point out is this: that in this country, the European system, as to *time*, must be varied, and the plants must be got to their full size, as to wood and foliage, before the time of spring, when the increase of the sun's power will necessarily force them into immediate bloom, without giving time for their bloom-branches and buds to be properly developed before the flowers expand.—*Horticulturist.*

THE PLUMBAGO LARPENTÆ.

[LADY LARPENT'S LEADWORT, OR PLUMBAGO.]

In 1846, Mr. Fortune found this beautiful plant on the ruined ramparts of Shanghai, in China.

All who have seen it describe it as one of the most charming blue flowery plants now known for bedding out in masses, as we do the verbena, petunia, etc. The *plnmbago capensis* is a well known, useful plant for bedding out, but it seems to be the opinion of cultivators that this new one entirely supersedes it. It will undoubtedly prove much better adapted to our climate, and answer bedding purposes better, from its compact and bushy habit. It is described as having obovate, pointed leaves, finely serrated and firinged with hairs on the margin, as will be seen by the cut. The flowers are produced in terminal clusters, and are clear, deep blue, or intense violet color, with a tint of red in the throat, increased by cuttings of the young wood. An idea may be formed of the profusion of its blossoms from the fact that a single plant has borne 4,000 blossoms.

PLUMBAGO LARPENTÆ.

The *London Horticultural Magazine* says: "The plumbagos flourish in any light, porous, turfy soil, but in none better than where sandy loam preponderates. The present species must be particularly well drained, and not too freely watered. It may be propagated by cuttings planted in sand, and set in a mild hot-bed; these cuttings should, as in the case of other bedding plants, be planted in the latter part of the summer, and kept over the winter in green-houses or dry frames until the following spring.

For pot culture it will, doubtless, prove a very desirable subject. It must, in this case, be regularly shifted into pots containing a compost in which turfy loam preponderates, not using very large pots, and having these drained in an efficient manner. The plants should, while young, be well stopped back, the point of the shoots being removed as soon as practicable, after they reach from two to three inches long. This is to be continued until a good, round head of branches is produced, and the plant should then be allowed to grow on for flowering."

THE NEMOPHILA.

NEMOPHILA.

The *Nemophila insignis* is one of the prettiest of all dwarf annuals for the border, or for masses on a lawn. Its foliage is delicate and fine, and its flowers of a beautiful blue. It blooms in great profusion, and a long time. We extract the following notice from the *Horticultural Magazine* (English). There is another new and rare one, *maculata*, of a fine, dark violet, with a white spot in the margin of the petal, worthy a place among the select annuals:

"This is a showy annual of a dwarf growth, which soon displays abundance of small, blue flowers, a little cupped, having a pure white eye, and deeply-cut leaves. Its seeds may be sown at different seasons, a few in April, and a few at the end of September; for if the winter be not very sharp, they will bloom very early in spring, and those sown in the spring will come into flower by the time the autumn-sown ones decline. The young plants will bear removal, but I prefer sowing them where they are to bloom; there is, however, no harm in planting out the few that you take up from a patch when they have been sown too thickly; and some gardeners make them regularly potted plants, and, therefore, sow all in one place, and pot off or plant out at pleasure. They are very beautiful till they begin to straggle along the ground, when, although they still keep flowering a little, I should advise you to pull them up to make room for something better."

For this and the preceding engraving and the descriptions, we are indebted to the *Genesee Farmer*.

PEACH-TREES KILLED BY THE COLD.

Messrs. Editors:—Having lately noticed several quotations in the newspapers in regard to the extreme cold winter having killed not only the peach-buds, but the trees also—in cutting the limbs from one thousand trees, Mr. Schenk found no exception—all had perished.

A similar report was current in the spring of 1835, that the hard winter had killed all the young and thrifty peach-trees.

The nursery trees were certainly killed, not by the winter, but by an early, sudden, autumnal frost; before the sap had descended, or the trees were prepared for such a sudden transition.

Nurserymen who have been inoculating their trees late in the fall, will, no doubt, appreciate my remarks, as they have found to their mortification, day

after day, the bark and sap setting more and more, till they could not perform the operation successfully any longer. In the fall of 1834, there came an early, sudden frost; soon after which, my father, Samuel Champion, was trimming in his nursery, when he discovered that the sap and inner bark was of a dark yellow color, which somewhat alarmed him. In the spring following, his fears were too well realized. This and many other whole nurseries had perished from that early frost while the sap was circulating.

But more fully to prove the fallacy of an extremely cold winter killing the peach-trees, every farmer or wood-chopper in the northern, middle, or western States knows that large forest-trees are frozen through with ice to their center by the frost of ordinary winters; and if the cold was five times greater, it would do no more than freeze to solid ice. This does no harm to the peach-trees after the sap has gradually and naturally set. More than forty years ago, peach-trees generally lived to the age of twenty, and some of them thirty years old, in full bearing, healthy, and vigorous; but the trees now taken from the nurseries in the northern and middle states, seldom bear more than three or four crops, and some of them not more than one, whilst others never bear any.

In the future, I may indicate the means by which this most delicious fruit may be restored to its original size, flavor, and quantity—the trees to live and bear fruit for twenty years and upward.

THOMAS CHAMPION.

Washington, D. C., April 14, 1855.

CINCINNATI HORTICULTURAL SOCIETY.

THE List of Premiums for 1855, issued by this very efficient Society, is received, with their rules and regulations. These do not essentially vary, so far as we have discovered, from the rules of other societies, save in this, that COMPETITION FOR THE PRIZES IS OPEN TO ALL CULTIVATORS OF THE WESTERN STATES, and without payment of a fee. "All articles not donated to the Society must be marked 'RESERVED.'"

The following is a list of the officers and committees of the Society:

OFFICERS AND COMMITTEES OF THE CINCINNATI HORTICULTURAL SOCIETY.

PRESIDENT.—Dr. S. Mosher.

VICE-PRESIDENTS.—George Graham, A. H. Ernst, John P. Foote.

COUNCIL.—M. McWilliams, A. Worthington, L. Rehfuss, J. K. Green, G. Sleath, P. S. Bush, S. W. Pomeroy.

SECRETARY, TREASURER, AND LIBRARIAN.—C. C. Pomeroy.

CORRESPONDING SECRETARY.—J. A. Warder.

FRUIT COMMITTEE.—J. A. Warder, M. McWilliams, S. S. Jackson, J. K. Green, P. S. Bush.

FLOWER COMMITTEE.—J. P. Foote, Theo. Pfau, S. W. Pomeroy, D. McAvoy, Geo. Graham.

VEGETABLE COMMITTEE.—G. Sleath, D. Foster, A. Worthington, C. Pinkenstein, P. Considine.

PLUM-TREES.

A CORRESPONDENT of the *Country Gentleman* says: "I attribute my success mainly to an hereditary strain of Yankee principle, producing a strong propensity to use a jack-knife. My trees are mostly grafted on to suckers of the native or wild plum, near or at the surface of the ground. The scions take well in such stocks, and grow strong, frequently from four to seven feet in a season. In the spring of the first year, I cut back to two or two and a half feet, and each spring following, from ⅓ to ½ of the last year's growth. This causes them to grow stocky, with low, bushy heads, and to set thickly with fruit spurs. I have trees in different varieties of soil; some in cultivated, some in grass land. All do well. I manure with what is most convenient, without regard to kind or quality, long or short, stable or hog manure, ashes, old lime, soap-suds, fish-brine, chip manure, or whatever is at hand, plowed in or for top dressing.

The great enemy of the plum-tree is the black-knot. Now comes the grand question—Black-knot, what is it? Is it a disease, or the work of an insect? I will endeavor to answer these questions according to my observations. I consider it to be the work of an insect, with which I have no personal acquaintance except in the maggot state.

From frequent observation combined with practice, I find that June is the time to look for the enemy. There are no black knots then, of this year's growth, but simply swellings upon the branches. Now use your jack-knife, and you are sure of your foe. When these swellings first commence, so as easily to be found, the insect is of the exact color of the excrescence, and so small as usually to escape detection. Nevertheless he is there. From the middle of June to the first of July, they are easily found, generally two in a knot, varying from $\frac{1}{32}$ to $\frac{3}{8}$ of an inch in length—the largest in the mean time are leaving their cells. I have found them near by, sheltered by the rough bark, covering themselves with a thin, silk-like web. To all who wish to raise plums, (and who does not?) I would say, here lies the secret. Cut green knots instead of black ones. By following this practice, I have succeeded in raising very fine trees—not a black knot is ever seen on them. A swelling is occasionally found, but it is taken in time to secure the maggot. By this means, the insects are reduced to that degree that my trees never suffer thereby. I have trees from four to six years from the graft, from eight to ten feet high, with large, spreading heads, bearing the first season from one to more than two bushels per tree, of most splendid fruit, as many a satiated appetite can testify."

MORE COAL DISCOVERED ON THE PACIFIC.—Santa Anna, it is stated, availed himself of his recent march to Acapulco to test the accuracy of the reports that the mountains of Guerrero contain extensive coal mines. The result of his investigation satisfied him that there are almost inexhaustible supplies of this valuable article, which can be obtained in any quantity at Acapulco, at a cost considerably less than the freight on that now carried there from England and the Atlantic States for the use of our steamers. Santa Anna has also satisfied himself that the undeveloped precious mineral wealth of Mexico is immeasurably greater than has ever heretofore been supposed; and it is his desire and purpose to adopt measures to make these treasures available.—*Deseret News.*

BUTTER-MAKING.

[Our attention has recently been called to a very valuable and eminently practical Prize Essay, read before the Royal Agricultural Society of England. We published several articles on this subject, in our last volume, and are happy to find our own views confirmed by the very careful and scientific experiments, the results of which are given in the report described. We beg leave to invite the attention of all our farmers to the following portion of this subject, being all that relates to their particular business. The experiments were conducted by Professor Traill and the late Dr. Bullock. Their accuracy was subsequently tested by the writer of this essay, and his results, with one exception, "agreed remarkably with those made by the gentlemen named."]

One series consisted of the comparative quantity of butter yielded by the following:

1. Sweet cream churned alone.
2. Sweet milk and its cream churned together.
3. Sour cream churned alone.
4. Sour milk and its cream churned together.
5. Scalded or Devonshire cream churned alone.

On the 24th of May, the milk of four cows was drawn in the same vessel, passed through a strainer, and then divided into five portions of six English pints each, which were placed in similar basins of earthenware, in a place, the temperature of which ranged from 55° to 60° Fahr.

Monday, 25th.—The temperature of the air was very hot, 76°; but that of the milk-house, by constant evaporation of water, was kept about 60°.

Tuesday, 26th.—Thirty-nine hours after the milk had been drawn from the cows it was removed from below the cream of No. 1 and No. 3, by a syphon; the cream from No. 1, and the milk and cream from No. 2, were immediately churned in glass vessels.

No. 1.—Sweet cream churned alone. From previous trials it was found that the addition of cold water to thick cream facilitated the separation of the butter; half a pint of water was added to the cream, the temperature of the mixture at the commencement of churning was 62°. In fifteen minutes butter appeared in grains; the churning was continued for twelve minutes longer, or twenty-seven minutes in all, when the temperature was found at 70°. The butter was collected, but from the warmth of the weather was very soft. It was put into cold water until the next day, when it was worked and washed in the usual way, and weighed 1386 grains. It was of a good color, and perfectly well flavored.

No. 2.—Sweet milk and its cream churned together. The mixture of sweet milk and cream was churned at the same time; though cold water was added after one and a half hour's churning no butter was seen. The churning was continued three hours without obtaining butter.

No. 3.—Sour cream churned alone. On Thursday, the 28th May, the cream of No. 3, which had been separated on Tuesday, and placed in the milk-house, was now slightly acid, and was churned after half a pint of cold water had been added to it. In twelve minutes butter appeared; and in eight minutes more united into one mass. During the churning the temperature of the cream had risen from 54° to 63°. The butter was well washed and worked, and weighed 1756.5 grains. The color and taste were good.

No. 4.—Sour milk and its cream churned together. On the same day, 28th May, the milk and cream churned together, and half a pint of cold water was added. It was full fifty-seven minutes before any butter appeared, and before the churning appeared to be completed one hour and fifty minutes had elapsed; showing clearly that more time is required to churn milk and cream together than to obtain the butter from cream alone. The butter was diffused in small grains, and when washed and worked as long as any color was communicated to the water, it weighed 1968 grains. Color paler than the last, but of good flavor.

No. 5.—Clouted cream churned alone. On Tuesday, the 26th, the milk and cream of No. 5, were placed in a vessel of warm water until the temperature of the milk rose to 156°, a Devonshire dairy-maid assisting in the operation. The milk was drawn from below the cream by a syphon, the latter being kept cool until the following day, when it was churned.

It was ascertained that by churning the milk of Nos. 1 and 3, a few more grains of butter could be obtained on some occasions, but on no occasion from No. 5, so completely does the scalding process separate the butyraceous matter from the milk. The butter of No. 5, when well worked and washed, weighed 1998 grains. It had a rich yellow color, and tasted agreeably.

Similar experiments were repeated, the result of which was, that the largest amount of butter was produced by the Devonshire method; the next in quantity by churning the milk and cream together when a little acescent; the third in quantity was afforded by cream kept till it was slightly sour. The smallest quantity was obtained from sweet cream; but on no occasion was butter obtained by churning sweet milk alone.

In order to decide on the keeping qualities of the butter obtained by the four processes previously detailed, samples were exposed to the free action of the atmosphere.

No. 1 was always found to remain longer without any rancid taste than the other kinds.

Nos. 3 and 4 were nearly on an equality—if any difference, it was in favor of No. 3.

No. 5 became rancid more quickly than No. 3 and No. 4.

When salted for keeping, rancidity appeared in about the same order, commencing in No. 5, or the butter from scalded cream; next in No 4, from some milk and cream; then in No. 3, or sour cream; and lastly, in No. 1, obtained from sweet cream. The rancidity was supposed to arise from varying proportions of casein; and on instituting experiments to ascertain this fact, it was found that casein assisted in preserving its freshness.

In order to ascertain the effects of overchurning, the cream of six pints of milk was separated by a syphon, and churned in a glass vessel. The butter was formed in about half an hour; but the churning was continued for half an hour longer, when the butter had lost its fine, yellowish, waxy appearance, and had become pale and soft, while very little liquid remained in the churn. This butter could not be washed and worked until it had remained some hours in cold water, being so exceedingly soft when taken out of the churn. After washing it was pale, rather soft, and weighed 2566 grains, which was evidently beyond the due quantity, when compared with the other experiments on the same quantity of milk, which gave the following results:

No. 1. The sweet cream overchurned yielded 2566 grains.

No. 3. The acid cream duly churned yielded 2187.5 grains.

No. 4. The acid milk and its cream duly churned yielded 2397.5 grains.

No. 5. Scalded cream duly churned yielded 2671.

The butter of No. 1 tasted insipid, never became firm, and soon turned rancid. It was found to yield a very unusual quantity both of casein and watery fluid, which could only be separated by melting the butter.

It is a common opinion in some districts, that by adding hot water to the churn, more butter is obtained than by using cold water. Experiments made for the express purpose did not show that the weight increased very much, and it was attended with a perceptible deterioration in quality, giving it generally the appearance of overchurning.

The results of the experiments above detailed are—

1st. That the addition of some cold water, during churning, facilitates the process, or the separation of the butter, especially when the cream is thick and the weather hot.

2d. That cream alone is more easily churned than a mixture of cream and milk.

3d. That butter produced from sweet cream has the finest flavor when fresh, and appears to remain the longest period without becoming rancid.

4th. That scalded cream, or the Devonshire method, yields the largest quantity of butter; but if intended to be salted, is most liable to acquire a rancid flavor by keeping.

5th. That churning the milk and cream together, after they become slightly acid, is the most economical process for districts where butter-milk can not be sold; whilst, at the same time, it yields a large amount of excellent butter.

COTTON AND ITS CULTURE.

A CORRESPONDENT writes to the *Farmer and Planter* as follows: "We never could see the sense of throwing up, with great care, a high bed for cotton, and immediately set all hands to work to tear it down. We have tried various expedients, but never found out how to plant cotton until last spring. For this we acknowledge our indebtedness to Capt. Thomas Byrd, of Greenwood, from whom we received an implement for smoothing and opening the cotton bed, which does its work to perfection—a cover adapted precisely to follow in the wake of the opening, leaving your beds nicely smoothed over, and ready for the reception of the seed, and a scraper to do the first working—decidedly the best implements we have ever seen. This forms a complete set of implements, adapted to cotton-culture, simple and cheap, which any good blacksmith and plough-stocker can make easily. If Novice will try Capt. Byrd's implements, and not agree with us, we will acknowledge the corn, and pay for them. Let us be understood, we are not puffing an implement manufacturer, but offering an acknowledment due to a public-spirited planter who took the pains to set us right. By the way, while talking, we may as well say that the best variety of cotton we have ever planted is the "Calhoun Cotton." Where it originated, we are not able to say. Capt. Byrd kindly sent us half a bushel of seed, from which we have picked 511 pounds of very beautiful cotton. The overseer counted seventy bolls on one stalk not over knee high. It is no humbug, for we have selected our seed for years from fancy stalks, and being side by side, we have been compelled reluctantly to give it up. We trust that even Broomsedge may be allowed to puff a home-made article. Before closing, we must dissent, however, from Novice's declaration. Twelve hundred pounds cotton per acre on common land—stand or no stand—it is no common land that will average seventy bolls of matured cotton per stalk."

DECOMPOSITION OF WATER OR STEAM BY HEAT.

We take the following extract from an exchange:

"But whatever may be thought of these, or of the many other more scientifically accurate, although, perhaps, less practical experiments, there is little doubt but that water is sometimes burned, and burned economically, when mixed in small quantities with carbonaceous matter. Mr. Moses Thompson, of Binghampton, N. Y., has lately patented, and is now, with considerable success, introducing a furnace for the burning of very wet fuel, which appears likely to affect the mode of conducting some of our less important steam-generating processes, and promises ultimately to succeed in sugar boiling, than which, perhaps, few discoveries are more desirable. Mr. Thompson has succeeded in burning wet tan, direct from the vats of some of our largest tanneries, and in generating therefrom an intensely white heat, sufficient to melt cast or wrought iron in a very few minutes. In fact, the high temperature generated and maintained in the furnaces, and the means adopted to attain this result, form the main distinguishing features of the invention. One great error in previous attempts to burn wet fuel, has consisted in admitting more rather than less air to the wet fuel. Mr. Thompson constructs his grates somewhat in the ordinary manner, but with greatly diminished spaces between the bars, depending for a large portion of the oxygen on that set free by the decomposition of the water. The process completely consumes the fuel without the production of smoke, but this is accomplished only by having two or more furnaces in connection, and supplying fresh fuel to one only at a time. The necessary high temperature is maintained by having the furnaces at some little distance from the boiler, and thickly casing them with fire-brick and other non-conducting materials, allowing the flame and intensely-heated gases to flow from the two furnaces into contact with the boiler after mixing together. The furnaces are ovens of brick, somewhat analogous in form, but more in temperature, to air or puddling furnaces for melting metals. The fuel is supplied through a cavity in the top of each furnace, and is allowed to pile itself up in a cone, with no regard to equal distribution over the surface of the grate. The flame passes off nearly horizontally into a mixing chamber, and thence to the boilers, under and through which it is allowed to flow in a manner similar to that usually employed in utilizing the waste heat from the iron manufacture. One furnace only being supplied with fresh fuel at a time, the steam escaping is sure to find in the mixing chamber, which is merely a place of junction of the flue passages, a sufficiently high temperature to decompose it. The grand features of the invention consist, firstly, in carefully cherishing the heat of the furnace to induce the production of an intensely high temperature; secondly, in mixing the gases from fresh fuel with those from fuel previously well heated; and, thirdly, in admitting a very limited supply of air. The degree of temperature attained is not, of course, ascertainable, even approximately, without careful and expensive experiment; but the fact that all metals introduced into the flue passages disappear very rapidly, and that the fire-brick roofs of the furnaces have an inconvenient habit of fusing and running down in vitreous streams, if proper precautions are not adopted, argues the existence of as high a temperature as any ordinarily employed in the arts. The fuel principally employed in these furnaces thus far is wet tan, oak tan being more suitable than hemlock tan, because of its greater coherence when partially consumed. The process of combustion

renders the mass highly porous, like honeycomb, the fire percolating it from beneath in countless streams, which, in case of oak tan, increase in size until the whole is consumed, whilst with hemlock the mass is continually crumbling down and stopping the passages. Several experiments have been lately made on the sugar plantations of Louisiana, in burning the megass, or crushed cane, direct from the rolls of the sugar mill. The only difficulty at present apprehended by the inventor relates entirely to the mode of feeding this bulky and trashy material. Several eminent sugar planters in the vicinity of New-Orleans, express their high hopes of its greatly increasing the efficiency of this species of fuel."

THE HORSE.

[A LECTURE upon the horse, by Mr. Zadoc Pratt, has been extensively published; and in the former volumes of this journal, numerous articles are found containing much information in reference to this noble animal. The view taken by Mr. Pratt is, however, so unlike the track generally pursued, that we have made the following abstract from this lecture for the benefit of our readers.—EDS. P. L. & A.]

"And now let me give you my idea of a good horse. He should be about fifteen-and-a-half hands high; the head light, and clean made; wide between the nostrils, and the nostrils themselves large, transparent, and open; broad in the forehead; eyes, prominent, clear, and sparkling; ears, small, and neatly set on; neck, rather short, and well set up; large arm or shoulder, well thrown back, and high; withers, arched and high; legs, fine, flat, thin, and small boned; body, round, and rather light, though sufficiently large to afford substance when it is needed; full chest, affording ample play for the lungs; back, short, with the hind-quarters set on rather obliquely. Any one possessing a horse of this make and appearance, and weighing eleven or twelve hundred pounds, may rest assured that they have a horse of all work, and a bargain which is well worth getting hold of.

I will now call your attention to different varieties of horses in foreign countries, and in our own.

The Egyptian horse is generally known by the name of the African barb. He exceeds the Arabian in stature, and is principally remarkable for the fullness and height of his shoulders, and the drooping of his haunches. The most remarkable of his tribe are the celebrated "drinkers of the wind." They are wiry and fleshless, and shaped something like the grey hound. It is related of one of these horses, that he once performed a journey of sixty miles, in the hottest period of a burning African day, without the rider's drawing bridle, or allowing him to relax his speed a single instant, until the journey was completed. The little African kingdom of Donkala is celebrated for a breed of horses of large size, which some have considered the handsomest in the world. Every attempt to introduce them into any other country has failed, however. The celebrated Egyptian horses were also ridden by the prophet Mahomet and his four companions, on the memorable flight from Mecca, in the year 622, and now known as the Hegira.

The Arabian horses are small, only averaging thirteen and fourteen hands high, rather inclined to be lean, and, in traveling, they rise higher from the

ground than any other blood horses, and gather more quickly. They are generally of a dappled grey, or dark brown color, with a short, black tail and mane. They usually run wild, and, in that condition, they possess the greatest mildness and generosity of disposition. After they are domesticated, they are played with by the children, have the most favored corner of the tent, and occupy a deservedly high place in the affections of the family. This affection seems to be returned with more than ordinary sagacity, for it is authenticated that, the master being in danger, the horse has put forth every power to the utmost, and so strained his endurance that, on reaching a place of safety, he has instantly yielded his life. They are usually captured by snares hidden in the sand, by which the feet become entangled, and the terrified animal, falling to the ground, is made an easy prey. Their amazing speed renders this the only method by which they can be taken.

The Persian horses resemble those of Arabia in general appearance, though somewhat larger. They are esteemed less highly than the Arabian, though I think they have some points of superiority.

The horses of Tartary are exceedingly swift, even outstripping the antelope; though here their resemblance to favorite breeds ceases entirely. They are large and very heavy-headed, very low in the shoulder, awkwardly made, and very ill-looking. When feeding, one of their number is placed on an eminence as sentinel, and on the approach of danger he starts off, the rest following like the wind. The fabled flight of Mazeppa, lashed to the back of a wild horse, is supposed to be among the wild herds of Tartary.

In Turkey, horses are held in the highest esteem, which they well deserve, being of the most docile and affectionate disposition. They are the result of a cross between the African and Arabian, and are full of fire and life, with a light make, splendid head, and great powers of endurance. The tail of the horse is considered an emblem of dignity in Turkey, from the fact that a Turkish army once lost its standard in battle, when the leader, to inspire the drooping courage of his men, cut off the tail of a horse, hoisted it on the end of a spear, and rallied his forces to victory. As a reward, he received military promotion, the emblem of which was a horse's tail. The rank of the owner is known by the number of tails he is allowed, the highest being three, and the officers are called "pachas of three tails."

The genuine East Indian horse is of small value, owing to the unsuitable climate, which seems to be highly unfavorable to his improvement, and the pure native-breed is small, ugly, and ill-made, being equally deficient in form, spirit, and endurance. By judicious and repeated crossings, and the utmost care in obtaining healthy stock, a species of horse has been introduced into the country which will compare favorably with any other. The greatest and most continued pains are necessary, however, or they will soon degenerate.

The European horses will next engage our attention. One of the most beautiful is the Spanish, or Andalusian, which originated from the Barbary horse, the only fault being that the head is large in proportion to the body; the mane is thick, long, and graceful; the ears long, and the eyes very animated. The Italian horses are very large and finely shaped; they were once highly esteemed, but are now principally used for carriage horses and for heavy cavalry. Danish and Swedish horses are stout and well built, but slow and inelegant. The Dutch and German horse is preferred throughout Europe as a draught horse. The Russian horse is large limbed and powerful, with long, stiff hair, standing out from the body, and is not very highly esteemed. The French horses differ much according to the portion of the country from whence they come; and the same may be said of the English and American, to which I shall now invite your attention.

The native English horses, even in the seventeenth century, were very small, though serviceable, and only commanding low prices.

After that time, in the seventeenth century, the breed of horses most in demand was the Spanish Jennet, and they were imported for all purposes of pageantry or war. The aristocracy had their coaches drawn by the gray Flemish mares, which were thought to trot with peculiar grace, and which endured better than others the labor of drawing the lumbering and heavy vehicles of that period over the then rugged and unpaved streets of London. The very common proverb of "the gray mare is the better horse," applied to those families where the wife is supposed to rule the house, is said to have arisen from the great preference given to the gray Flemish mare over the best horses of England. The celebrated English hunter is supposed to have derived its origin from a cross between the race-horse and some heavy Spanish chargers, brought into England in the reign of Edward the Third, and they have ever since formed a distinct class.

With regard to the horses of America, we learn that large numbers were brought over by the early Spanish and English discoverers. The first were imported by Columbus, on his second voyage, in 1493. The first brought to any territory now belonging to the United States, were landed in Florida, in 1527, by Cabaca de Vaca. They were allowed to run loose during the dissensions that followed, and multiplied to an almost incredible extent, especially in South America

The wild horses found in North America, when the West was first explored, were more hardy; they were of Spanish extraction, and had been brought into use by the natives to a great extent, though many wild herds of immense numbers still roam freely over the prairies of our western territories.

The race of horses which originated those now used in this country, and in Canada, were imported from various nations.

In 1609, one horse and six mares were brought to Virginia from England. In 1825, a few Dutch horses from Holland were imported into New-Netherlands, now the State of New-York. In 1604, M. L. Escabot brought the first horse into Canada and Nova Scotia, then known by the Indian name of Acadia. The first horse brought into Massachusetts was from England, and was imported by Francis Higginson, in 1629. In 1678, they existed in considerable numbers in Louisiana. The Indians on Red River, in Texas, used them in 1690. The early French settlers in Illinois had them in considerable numbers in 1750.

The same vessels brought over the first importations of cattle, sheep, and swine, and they have increased so as to form a most astonishing portion of the wealth of the country.

The West Indian horses may properly be classed with those of America, and they generally exhibit the characterising marks of the nation to which the island belongs.

The Canadian horses are of French origin, and to this stock we are indebted for most of the trotting horses of the United States. It is a marked peculiarity of the Canadian horse that he always trots, as the Arabian horse always canters. Other breeds exhibit all the peculiarities of movement, including the trot, canter, and amble, but the Arabian horse never trots, and the Canadian rarely canters. Beside the trotting horse, we are indebted to Canada for many of the most serviceable specimens of the cart and dray horse, of their size, and in the northern part of this State, in Vermont, and other sections on the Canada line, they are met with in great abundance."

CORN, RYE, AND INDIAN-BREAD.

We have been resolved into a committee for a special report on this very important branch of the great culinary art, and if our readers do not understand and act discreetly in reference to it hereafter, it is not our fault.

We profess to speak, in the following passages, *ex cathedra*, and if others do not succeed in their earlier experiments, they must try again:

CORN-BREAD AS MADE AT GREEN'S, CHAMBERS-ST., N. Y.

Take 7 pints yellow corn-meal, 3 pints wheat flour, and mix them well together; then 6 eggs, well broken, 2 cups melted butter, and a little salt and sugar to suit the taste. Put this mass together, and mix with milk to make a batter about the consistency or stiffness of paste prepared for drop-cake. Then dissolve three teaspoons-full of cream of tartar, and the same of soda; pour it upon the mass, stir it in thoroughly, and dip it at once into pans, and bake in a hot oven.

CORN-BREAD AS MADE AT CROOKS', CHATHAM-ST., N. Y.

Take 1 quart of milk, 3 eggs, beaten, butter half the size of an egg, cream tartar, 1 teaspoonful, salt and sweeten to your taste. To this add corn-meal to make a paste about the consistency of griddle-cakes; put in pan immediately, and bake in a hot oven.

BOSTON BROWN-BREAD.

To make this article, take of best yellow corn-meal two parts; of unbolted rye-meal (the rye should be screened before grinding) one part; partially wet and mix the corn-meal with hot water, then add the rye and the yeast, (hop-yeast, one pint to nine quarts of meal,) and thoroughly mix with more warm water, if necessary, to make a mass neither hard nor soft, but stiff enough to be transferred with care by the hand from the kneading-trough to the pan; then let it stand till it begins to show signs of rising; put it into the pans, and let it stand a few minutes if it is not "rising" too fast, then put it to bake; if in a brick oven, six hours will be none too many; if in a common stove or range, care must be had not to burn, and bake from three to six hours according to size of loaf. The heat should be moderate after the first two hours, but steady; keep up a scalding heat after the outside is browned properly.

Many people use three quarts or pounds of rye-meal to five quarts or pounds of corn-meal, which, we think, are the best proportions for pure, New-England "rye and indian." S. D. Ostrander, Boston brown-bread baker, of this city, 378 Bleecker street, uses 2 parts rye to 4 of corn-meal, and hop-yeast, adding a little molasses to a part to suit the taste of customers. Too much molasses is worse than none for most people.

But we next give the receipt which we would set forth as making a better article than all the brown-bread ever baked in the city of Boston, where, of course, bakers only imitate the "*real* original" article made by the housewives of Yankeeland. It will be perceived that we still hold on upon *milk*, and though a large proportion of this bread is mixed with water only, we go for this liquid as a valuable improvement:

REAL NEW-ENGLAND BROWN-BREAD.

Take equal proportions of sifted rye and Indian meal, mix them well together; add half a tea-cup-full of molasses, and two gills of good yeast, to about three quarts of the mixed meal. Wet this with good, new milk sufficient to make a dough that can easily be worked, even with one hand. For economy's sake, milk that has stood twelve hours, and from which the cream has been taken, may be a substitute for the new milk; or water which has been pressed from boiled squash, or in which squash has been boiled, is a substitute much better than pure water. But warm water is more commonly used. The ingredients should be thoroughly mixed, and stand, in cold weather, for twelve hours; in warm weather two hours may be sufficient before baking.

If baked in a brick oven, a three-quart loaf should stand in the oven all night. The same quantity in three baking-pans will bake in about three hours.

Serve this warm from the oven, with good, sweet butter, and we could *fast* upon it every morning for breakfast, from January to December.

STEREOSCOPES—MR. MASCHER'S PATENT.

We took occasion, last month, to notice the new form of stereoscopes, patented by Mr. Mascher, of Philadelphia, by means of which daguerreotyped persons are made to appear in a most wonderfully life-like form. We have since seen another form, designed for views of natural scenery. This is as neat and compact as those before described, being scarcely thicker than a common leather daguerreotype-case, and, perhaps, double the size of those for one-quarter pictures. The effects on representations of natural scenery are equally beautiful as in the case of the living form. Buildings, trees, hills, and other material objects, stand out in the boldness, and grandeur, and distinctness of reality. These pictures are photographic, and may be had either on paper or on glass. Those on paper are very fine. Among these we have seen are the Girard College, in Philadelphia, High Bridge, near New-York, the Capitol at Washington, part of the White House, Niagara Falls, the Suspension Bridge, Washington's Tomb, the Coliseum, etc. These are only $3 a dozen. Others are taken on glass, and are absolutely superb. The Capitol at Washington, for example, looms up before you in all its massive proportions, with all its ornamentations, its roughnesses, etc., like the real structure. These are $18 a dozen. Paper, on glass, so as to be transparent, at $6 a dozen, are very fine—nearly equal to the best. The stereoscopic case itself is only $2,50. Those who love elegant luxuries, and those who would patronize real genius, in these its most useful discoveries and inventions, should order, then, the most beautiful of all optical instruments. We wish our finances would allow us an entire set of those on glass. These have a fine effect in the evening, before a bright lamp, or gas-light. In using the paper photographs, the light should fall brightly on the picture.

Many of our readers may have seen similar results, in a less elegant form, by means of glass lenses in a large case, in connection with coarse engravings, or as they are arranged in Barnum's Museum, round the sides of the room. Those are either paintings or engravings. Saddler's cosmoramas, that are so

very beautiful, and excited so long and so widely the attention of citizens and strangers, in his rooms on Broadway, are produced by similar processes, though his pictures are vastly finer than those in the Museum. In this little case, which, with the series of pictures, a gentleman could carry in his coat-pocket, one may have a set of cosmoramas on his own parlor-table, and if he loves beauty, they will not lie there forgotten or uncared for. Every caller will be invited to look at them; and at a party, when material for conversation runs low, scandal being used up and worn threadbare, these little representations of the grand, or great, or beautiful scenes, made interesting by historic incident, or by a personal visit, in times gone by, will be regarded with peculiar satisfaction.

Do not forget Mr. John F. Mascher, 408 North Second street, Philadelphia.

A notion of this invention was given in the March number of *Silliman's Journal.*

We will order and forward to any subscriber who wishes them the style he may select.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

METEOROLOGICAL.

Messrs. Editors:—I have seen some notices on the above subject in your periodical, and thinking a few remarks on the weather the last season might be interesting to some of the readers of your wide-furrowed Plow, I subjoin a few facts:

The summer of 1854 was extremely dry—a great and wide-spread dearth of all the products of the earth: the corn did not ear, the oats did not fill, and many fields were mowed for fodder; the grass did not seed, the hay was short of nourishment, and takes one-third more to winter the stock than usual.

Hay will command any price demanded—$20 per ton [$5 a usual price, we suppose.—Eds.] is paid, and cattle starving. All edibles for man or beast are scarce and dear. I have kept tables, and noted the range of the mercury in the thermometer for some twenty years. Once in this time, previous to the 6th last September, the mercury is recorded 100°; that day, 6th September, at 12 o'clock, the mercury rose to 104° above zero. Professor Z. Thompson, of Burlington, was at my study. I requested him to step out and look at it, which he did, and hung one he had with him by the side of mine; that soon rose to 104,° and both to 106° at 1 o'clock; barometer, 28,50.° About 4 o'clock, P. M., we had a shower with thunder and high wind, which prostrated many fruit-trees, fences, and some buildings.

The winter has been moderate for our high latitude, except a few cold days. The 20th December, the mercury fell to 35° below zero, as cold within one degree as it has been in this locality for twenty years. December 22d, the mercury stood at 26°; 23d, at 30° below zero; 25th, at sunrise, it stood at 34° above zero, and would range as high as 38° at sunrise occasionally. On the morning of the 6th of February, 1855, the mercury was 26°, noon, 18°, sunset, 24°; the most tedious day last winter—a stinging N. W. wind. Wednesday, the 7th, at sunrise, the mercury stood at 38° below zero—the coldest morning for twenty years, or since I kept a thermometer. In many localities in the state it stood at 40° below zero. The 9th of February, the

mercury rose to 11° above zero. April 2d, high, south wind, snow, and wind all day; and, until noon, the 3d, the roads were blocked up with snow worse than at any other time through the winter. Blue-birds made their appearance the 4th of April, and robins the 5th of April, 1854. Both birds were seen by me on the 6th. The Louisville river cleared of ice, last year, the 13th; this year, the 17th. Shower, with thunder, the 18th, at sunset. Plowing was commenced the 19th; last year, the 20th.

At this time, the weather is rather favorable—snow mostly gone on low lands; the mountains and hills mostly covered. Rain is needed to start the grass.

ARIEL HUNTON.

Hyde Park, April 22d, 1855.

NEW AMERICAN PATENTS.

MORRIS'S IMPROVED BUCKET FOR CHAIN-PUMPS.

THE annexed engravings illustrate an improvement in the bucket for the common chain-pump, patented by Edmund Morris, of Trenton, N. J., January 3, 1855. This bucket makes an entire change in the chain-pump, altering it from a mere lift-pump, which loses its water the moment you cease to turn the crank, into a suction pump, that retains the water, and which a single turn of the crank will cause to discharge at the nozzle. Its construction is extremely simple, while its cost is probably no more than the ordinary iron disk, as, no matter how deep the well, only two of these buckets are required to be in the log at the same time, while the iron disks occur every few inches. These numerous disks being dispensed with, the chain is, therefore, much lighter.

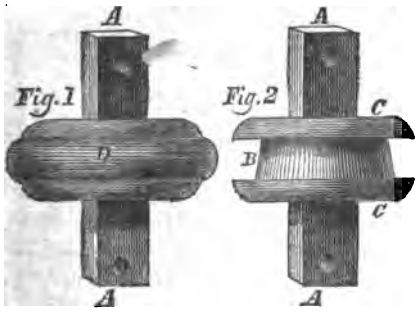


Figure 2 is an iron casting, having a shank at A, at each end, by which to rivet it to the chain. It is supplied with two flanches, C C, of equal diameter, and these flanches are connected by a cone, B. A ring (1½ inches in outside diameter) of india rubber, D, figure 1, is stretched over one of the flanches on to the cone, and fills up the space between them, or very nearly so, as seen in figure 1. This figure represents the bucket complete. It must be remembered that the inside of the flanches, where they join the cone, are hollowed out, so that the ring, when compressed by the passage up the pump log, can partially contract itself into this hollow space, from which it escapes as soon as the bucket emerges from the log, and recovers its original elasticity. The bucket also, when ascending the log, will force the ring down to the base or thickest part of the cone, thus causing a very trifling amount of expansion of its diameter, or just enough to make a perfect air-tight fit, and a consequent vacuum, like the piston of a syringe. As the upper bucket escapes from the log, another one should enter at the bottom. Water is the

lubricator for gum, as oil is for metal; there is, consequently, a very small amount of friction.

These buckets possess the merit of not wearing out the log, nor themselves. They will last many years, and should the rings, from any cause, require renewing, a new set can be put on in five minutes. All the old pumps now in use can have the old buckets replaced with these, the same gearing answering in both cases. The bucket which is to receive the ring can be cast at any country foundry, and the patentee can furnish the rings at a very small price. No change of weather affects the elasticity of the rings, as the gum is vulcanized expressly for the purpose. It would be difficult to construct a pump which works more accurately.

Particulars may be learned by addressing the patentee.

NEW SEWING-MACHINE.

We present our readers with a representation of a novelty in the line of sewing-machines. This is entirely different from those so widely known and so extensively used. The inventor is F. R. Robinson. It has since been in the hands of Howard & Davis, the well-known clock and gold-balance manufacturers, and in their establishment, under the supervision of S. R. Roper, a new needle and some other improvements have been added. The motion is all communicated by a cam on the shaft, to which is attached the balance-wheel, as shown in the cut. By the revolution of the cam, the two arms, diverging from a common axis, are elevated and depressed. At the extremity of each arm are placed the needles. The needles are a curiosity in themselves, being hollow, and in each is a piston. As the under arm comes up, a shoulder on the piston of that needle meets a stop; the needle then has passed through the cloth—the eye of the needle is opened by the stoppage of the piston, and then receives the thread; as the arm retires, the eye is

closed, and the thread is carried down through the cloth—the thread renders through the needle's eye loosely, and is left ready to be received by the upper needle in its descent, when it is again taken through the cloth in an upward direction by the ascending arm. Thus the thread is passed through and through the cloth, and the stitch is formed the same as by hand. The needles on the ends of the arms are adjustable (by a set-screw) from right to left, and *vice versa*, so that any size of stitch may be obtained that is desired, either a back or forward-stitch. In fact, any through-stitch that is taken by hand is produced on this machine; even the whip, or over-and-over-stitch. The sewing, by this invention, has no *under thread* by shuttle or spool. A single thread is only used. The sewing can not be distinguished from the best of hand production, except by its mechanical accuracy. By a very simple arrangement, any required degree of tension is obtained; and by the turning of a screw, the seam can be fastened off, just as by a woman, at the beginning and ending. This is the only machine which makes the same stich that is made by the seamstress with her needle.

As a specimen of ingenuity and workmanship, we think them well worthy of examination; and those who want the best work with the least labor had better look into them, and see for themselves.

The following is taken from the circular issued by the patentees:

"This new sewing-machine is respectfully recommended to public notice, and an examination of its work and merits solicited.

This machine actually SEWS, *threading its own needle*, and the *single* thread, passing *through* the cloth each time, forms the stitches *the same as by hand*, (without loop or chain,) but with that regularity, precision and rapidity, attainable *only* by machinery.

With very slight changes in the position of the needles, (by the turning of a screw,) each machine will produce *any* and *every* variety of THROUGH-STITCH that can be made by hand, and with any required degree of tension. The seam is *fastened* at each end as readily as in hand sewing.

It is applicable for sewing on any fabric; requires no special manufacture of silk or thread, the same kind and the same quantity being used as needed for the same stitch by hand, and no *ripping* or *unraveling* of the work.

The gain in the use of this machine over hand work is not less than SIX TIMES in *quantity;* while in *quality* it can not be approached.

They are manufactured with the greatest care and accuracy, very easily operated and understood, and can be used with less expense, and with less requirements for repairs, than any other machine now before the public.

TAILORS, CLOTHING DEALERS, HABIT and MANTILLA MAKERS, LADIES' BOOT and SHOE MANUFACTURERS, and all interested in obtaining the perfection of sewing by machinery, are particularly invited to examine this new and ingenious invention.

The advantage it possesses over all other machines, in the ability of *varying the stitch* according to the work required, will sufficiently recommend it as the BEST for FAMILY USE.

Ample printed directions and extra needles are sent with each machine, and they are securely packed for transportation to any part of the country.

They are all set up and ready for use as soon as taken from the box.

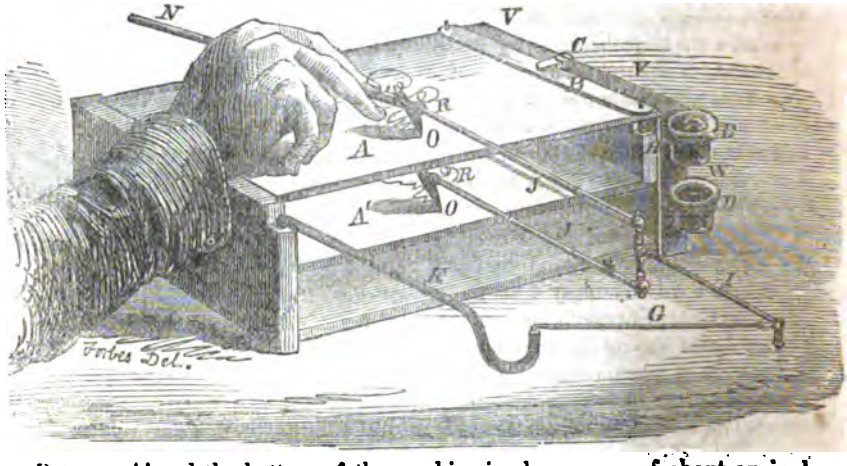
Price $150. Orders should state for what kinds of work they are desired, that suitable needles may be furnished."

AMES'S POLYGRAPH NEW WRITING MACHINE.

We have seen a machine, recently patented by Mr. Nathan Ames, a lawyer, of Saugus, Mass., the purpose of which is to write, at one and the same time, two copies of any document, and with about the same ease and rapidity with which a single one could be written in the usual manner. Any kind of paper may be used, which can be written upon by a common pen, and with the same ink that is used in the ordinary mode of writing. One is not an impression from the other, but both copies are alike, written by separate pens, and each one is a perfect fac-simile of the other, the hair lines, heavy strokes, &c., being the same in both; and both as much under the control of the writer, and exhibiting all the elegances of penmanship, as by the use of a steel or quill pen. If this is not an immense stride in useful inventions, applicable to common business affairs, we are very much in error. No lawyer who has contracts or bonds to write, of which duplicates are required, will be without one for a week, after he knows the *abilities* of this instrument. It would pay for itself in its first fifty pages.

Below, we present a diagram of this invention. A and A', in figure 1, are two parallel surfaces, either of the size of letter paper, or foolscap, or other desired form and dimensions, and about one inch and a half apart.

Fig. 1



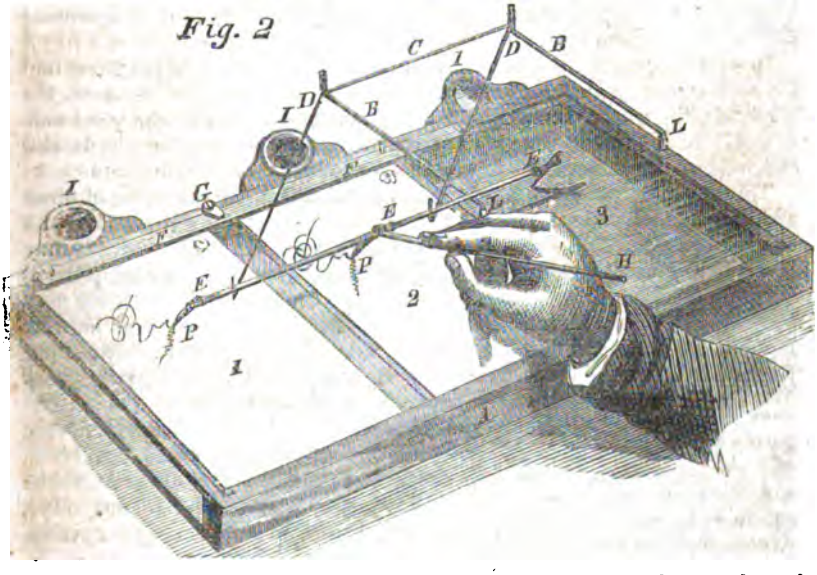
Between A' and the bottom of the machine is also a space of about an inch and a half. These plates may be of wood, metal, or glass. In the machines now in operation, plate glass is used, as it is perfectly smooth, uniform, and not liable to warp. They are kept in position by end and bottom pieces, (as represented in the engraving,) which may be of wood or any other material.

Into the right hand side of one of the end pieces, a rod, E, about nine inches long, and a quarter of an inch thick, and bent as represented in the engraving, is inserted, so that it swings horizontally and freely upon its point

of insertion. To the end of this is also hinged another smaller or lighter rod or wire, G, as represented in the engraving, which also swings horizontally upon its point of connection with the rod, E. To the end of the rod, G, is also hinged another rod, I, which, at a few inches from its point of connection with the rod, G, divides itself into two parallel prongs, J J, about an inch and a half apart. At the ends of these prongs, and at right angles with them, two pens, O O, are inserted. These are so adjusted as that their points are precisely the same distance apart as the upper surfaces of the two parallel plates. From the diagram, it is evident that each pen will have precisely the same motion. If, then, a sheet of paper be placed on each plate, the writing which is done upon the upper surface will be exactly reproduced upon the lower. The elasticity of the wires is such that the slightest pressure will bring the pens down upon the paper. By an arrangement of the inkstands, D D, upon one of the end pieces, both pens can be inked at the same time. To hold the paper firmly, a metal ferule or strap, B, is laid at one end, and held by slight springs at the ends, a little above the plate. The paper being placed beneath, the bar is pressed down upon it, and held fast by the button, C. The lower sheet is held in like manner by a wooden bar, H, which, by means of rods and spiral springs, is pushed down simultaneously with the upper strap, B. The whole arrangement and operation will be comprehended at a glance.

The pens are inserted through a split in the ends of the prongs, R R, and held fast by little rings or collars on the prongs. They can be changed or adjusted in a moment. Any pens will answer, but fountain pens are preferable, on account of the greater quantity of ink they hold. The pen handle is secured to the upper prong by two loops of wire, forming a universal joint, (in mechanical effect exactly like the ball and socket joint.)

Fig. 2



It is obvious that by increasing the number of prongs, and the number of writing surfaces, the number of copies can be increased at will.

Figure 2 represents an apparatus in which the writing is all done upon the

same surface, instead of being done upon parallel surfaces. Small wires B B, bent at right angles at the ends, L L, and there inserted into the writing surface or bed plate, so as to swing freely in their sockets, are also bent in the opposite direction, and at right angles at the other ends. These other extremities are connected together by a wire, C, the same length as the distance between the points, L L. To these extremities also are hinged two other wires, D D, which, at their further ends, are also bent upwards at right angles, as represented in the engraving. These upward bends of the wires are passed through small holes in a light hollow steel rod, E E E. To this rod are attached the pens, P P, in the same manner as described in figure 1. All these wires swing horizontally with the greatest ease, and with no perceptible friction. The wires, B B and D D, may be about six or nine inches in length, according to the size of the machine; the rod, E E E, of any length required. The pens must be as far apart as the width of the sheets to be written on. The pen handle is attached to the bar in the same manner as in figure 1.

When not being written with, the spring of the wires, D D, will lift the points of the pens a little above the surface upon which the paper is placed. The slightest pressure brings them down upon the paper. The same arrangement for holding the paper is used as in figure 1. The inkstands, I I, are the same distance apart as the pens, which will thus be inked simultaneously. From the engraving, it will be seen that a third pen might be inserted at the right hand of the bar, E E E, so as to make three copies at once. This is entirely practicable; but usually, two copies are sufficient; and instead of a third pen, a small screw rod there, is found to be useful in regulating the pens, so as to insure their always touching the paper together. In this machine, as in the other, a writing surface of plate glass is found to be the best. With both, one of the copies can be taken in a book, by inserting the right hand side of the open volume into the space beneath the glass, and turning the next sheet down upon it.

In either apparatus, the *whole actual mechanism* consists of the wires and the sockets upon which they swing. The rest is made up of the pens, the inkstands, the writing surfaces, and the arrangement for copying in a book. It would be difficult to conceive any contrivance to accomplish the desired end, wherein there would be less friction, or greater ease of movement.

This apparatus may also be applied to the multiplication of copies of plans and drawings of various sorts, in a much better style than is possible with coppying-presses. Old plans, nearly worn out, may thus be renewed. It may be made in a very economical manner, or finished as an ornamental piece of furniture for a parlor or library. It may be so compact as to be carried very conveniently in one's trunk, as he travels. For reporters it saves half, or more of the labor and the time, which is to them a matter of great importance. The cost is considerably less than of a good letter-copying press. We should judge that it can not exceed ten to fifteen dollars.

Harvey Brown, Esq., No. 121 Nassau street, has the disposal of the rights, and the sale of machines, or the orders may be sent to this office. We do not hesitate to recommend this invention as one of great value. It is not liable to get out of order. From the experiments we have made, we prefer the first form. Perhaps a longer trial would change our opinion. It occupies less surface on a table, but perhaps the lower pen does not so exactly exhibit the variations of pressure applied by the hand, to the upper, as we witness in the use of the second form.

PRINCE'S PROTEAN FOUNTAIN PEN, PATENTED 1855.—We are now writing with an instrument bearing this appellation. It is a capital invention. We do not know, from experiment, how long it can be used without being "dipped into the ink," and probably may not acquire such knowledge very soon. We have, thus far, in fact, written only three or four pages of letter sheet, at one sitting; but we are told that this pattern will write "six hours" without replenishing the ink. It will write long enough, at any rate, and for aught we can discover, it works admirably. We have been among the faithless in respect to such an invention, but must confess ourself highly gratified, so far, with its action. The contrivance for regulating the flow of ink is very simple and very ingenious. A well finished gold pen is applied to the handle, which, being hollow, is the fountain, and is of a material (Goodyear's Patent) not acted upon unfavorably by the ink. It requires a "fluid" free from sediment; and with this proviso, any of the various inks may be used with it. The electric spring of the pen, in writing, acts upon a metallic spring, which causes a greater or less rapid flow of the ink. Hence, this flow is proportioned according to the quantity required by the style of the hand employed. The common size costs $3. Office, 8 Appleton's Buildings, 348 Broadway.

OIL-SOCKET AND SCREW-PLUG.—Alfred C. Garratt, M.D., of Hanover, Mass., has recently invented an oil-socket and screw-plug for lubricating carriage-wheels, which is highly spoken of. By means of this simple apparatus, inserted in the hub of any carriage, cart or artillery, the axle can be cleaned and oiled without removing the wheel.

Dr. Garratt has secured a patent for his invention for this country and Europe. He is now negotiating with our government to have it applied to artillery and all public vehicles.

It is stated that by means of this apparatus, the wheels of the heaviest ordnance, by land or on ship-board, could be oiled, without the labor of removing them, and also with the saving, in all cases, of oil now wasted when poured upon the naked axle.

NEW ENGLISH PATENTS.

INGRAM'S CAST-STEEL RIFLE BARRELS AND BULLET MOULDS.

THE use of round shot is altogether a delusion. It is, indeed, such a gross misconception, as could never have arisen but for an excess of apathy and inattention to the subject, and its very obvious requirements. The spherical form of projectiles presents difficulties and defects throughout both the manufacture and use of the shot. Spheres are by no means nice things to cast. The greatest care of the moulder will not always insure accuracy of shape, as the conditions necessary for a successful reproduction of the pattern's contour are wholly wanting. Then, when the naked shot is fired from the gun, whatever irregularities there may be in its form exercise a most powerfully-deranging influence upon the aim. And even if the shot were truly spherical, it does not follow that a true, even traverse would be obtained, as the explosive action does not necessarily give a perfectly central driving pressure. Hence, in addition to the severe battering of the gun's bore, we have the

total derangement of the aim which ensues from the last rebound of the shot at the muzzle.

The cylindro-conoid obviates all this. It is easy to cast with accuracy, and its elongated form affords it a good guide along the bore, rendering it independent of all irregularities of shape, and any side action of the explosion. The substitution of the cylindro-conoid for the sphere has the additional advantage, that it provides an easy means of getting at the proper weight for a given size of shot. The regulations of the Ordnance as to the weight of their spherical shot are excessively stringent, so much so, that few founders can meet their requirements. Now, it is obvious that the sphere, being a form with which no liberties can be taken, the adjustment of the shot's weight must be through the specific gravity of the iron alone; and as the density of the metal varies, to some extent, in every locality, difficulties on this point will always be oppressive. But whatever form we choose for the shot, we must resort to clothing, both as a protection for the bore, and a means of increasing the accuracy of the flight, and the effective length of range. This clothing is possible under various forms. A cup-piece of leather or cheap pasteboard may be pasted upon one end of the shot for this purpose. If at the rear end of the shot this cup-piece, which would also be a wadding, would leave the shot on quitting the muzzle, so as to offer no impediment to the flight. If at the front end, provision must be made for the easy separation of the clothing-cap; and this may be done by dividing the cup-piece into sections, which are merely held together by some slight tie, or connection, sufficient to retain the cap in form until the gun is charged. When the shot emerges from the muzzle, the pieces of the cap separate and fly off.

Mr. Kennedy, who intends to adopt some such contrivance as this, has been most successful in making effective shot on his "guide-winged" principle. A shot of this kind, made lately at Kilmarnock, to fit a 10-inch gun, is 30 inches long from base to apex, and it weighs 314 pounds. The thickness of the metallic shell is 1½ inch, and it is bored out to a length of 24 inches, the remaining 6 inches of the conoidal part being solid. The guide or rifle-wings are angled, or inclined, to the shot's axis, to a sufficient extent, to give one turn in 50 feet of flight. This extent of rifle action is ample for the purpose; most rifle-makers have erred by giving too much turn, to the great increase of the atmospheric resistance.

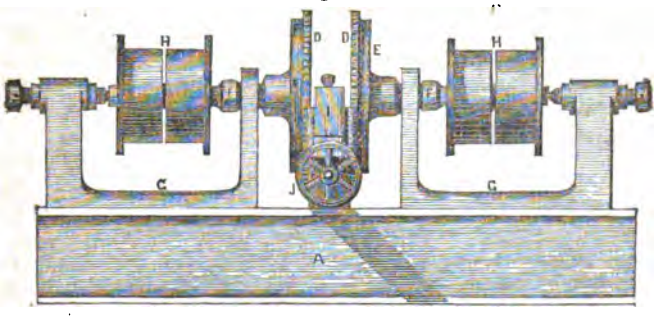
SLATER AND TALL'S WOOD-WORKING MACHINERY.

Mr. Thomas Slater, the optician, well known for his valuable inventions in connection with the mechanical arrangements of the electric light, and Mr. Joseph Tall, a tool-maker of acknowledged ability, have recently combined their endeavors for the improvement of the wood-worker's tools, with the most satisfactory result. The particular subject which they have taken in hand is the manufacture of joiners' and carpenters' planes, by the aid of set machinery, in such way that peculiar accuracy in the work is secured, in conjunction with great rapidity of production.

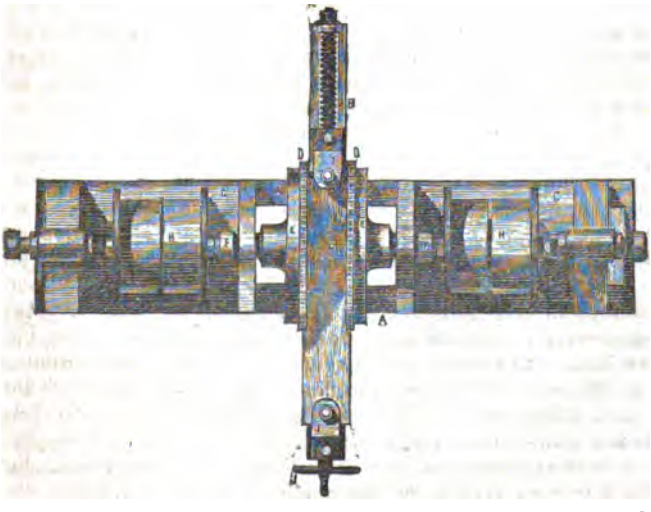
Messrs. Slater and Tall's invention comprehends, firstly, an arrangement of machinery for cutting the parallel sides of the blocks out of which the planes are to be formed; and, secondly, machinery for mortising the angular cavity into which the plane iron is fitted.

Fig. 1 of our engravings is a side elevation, and fig. 2 is a plan of the machine for cutting the parallel sides of the blocks out of which the planes are to be formed.

Fig. 1.



The working parts of this machine are supported by the cast-iron bed, A, similar to an ordinary lathe-bed, and upon this bed is situated the transverse slide-rest, B, which carries the rough blank, C, between the two revolving circular cutters, D. These cutters are composed of a number of steel segments, with serrated or toothed edges, bolted on to metal discs, E. The edges of the cutters next the block are slightly dished, or inclined inwards, for the purpose of forming a smooth cut, free from marks. The holding discs, E, are screwed, or otherwise secured upon the ends of the respective spindles, F, which work on the headstocks, G, standing up from the bed, A. These spindles may be driven by belts, and are fitted with suitable fast and loose driving-pulleys. The block, C, out of which the plane is to be made, is secured firmly upon the slide-rest by the screw-clamps or brackets, I, and is traversed forward between and against the two circular cutters by turning the hand-wheel, J, on



the front end of the horizontal screw spindle, K, which spindle revolves in collar bearings at each end of the slide-rest frame. The distance between the cutters is varied according to circumstances, by adjusting the headstocks

on the bed, A, in the manner adopted in ordinary lathes. The sides of the block having thus been cut perfectly smooth and parallel, it is taken out of the clamps, and turned so as to present the other two uncut sides to the action of the cutters, the slide-rest in the meantime having been brought back again to its original position, in readiness for the second traverse of the block. The four sides of the block having thus been cut perfectly smooth and parallel, it may be removed to one of the mortising machines, for the purpose of having the angular cavity for the iron cut therein. These circular cutters are obviously applicable for grooving moulding-planes.

THISTLE PAPER. LORD BERRIEDALE, London. Patent dated July 8, 1854.—Whilst India and other tropical regions have been traversed in search of a plant to be used in place of rags in the paper manufacture, Lord Berriedale has turned his attention nearer home, and has selected the common thistle as the most suitable plant for his purpose. His invention relates to the application and use of the common thistle, or *Carduus*, as it is termed, according to the botanical classification of Linnæus, in the manufacture or production of pulpy material from which paper is to be made, as well as in the manufacture of a fibrous material for textile purposes. All the varieties of the thistle plant are applicable for the purposes of this invention, but more particularly the large Scottish thistle, which grows luxuriantly in many parts of the British islands, attaining a great height and thickness of stem. Such thistles furnish, in each plant, a large amount of long fibre of great tenacity, and which, when duly prepared, is most excellently suited for the preparation of a powerfully cohering paper pulp, as well as for use in textile manufactures.

In adapting the thistle to the manufacture of paper pulp, the plant is used either in a green or dried state. If employed in its natural green condition, it is cut or gathered, and at once beaten or broken up by any suitable mechanism, such as is used in the primary treatment of the flax plant, so as to disintegrate the fibrous or ligneous matter. During this breaking treatment, the mucilaginous and aqueous matter present is washed clear away, either by pure water, or by an acidulous solution, or by any other economical and effective cleansing agent. When the thistle stems are thus fully reduced or disintegrated, the resultant fibrous mass is worked up or macerated in the usual manner, for the production of a pulp suitable for the use of the paper-maker. This pulp may be used in the manufacture of paper, either unmixed, or commingled with other materials already in use for making paper. The routine of manufacture into paper of the pulp is similar to that pursued with the ordinary rag pulp, or it may be varied as the properties of the thistle may suggest. The thistle fibre being strong, the paper made from it is of great tenacity, the fibres cohering well together in the paper machine, and being worked up with very little loss from washing away. The fibres are also of good color; hence, paper of a fair color may be made from them without bleaching, and if bleaching is resorted to, a very good white color is obtained at a slight expense. The mucilaginous or gummy matter dislodged from the fibres may be collected and applied in the manufacture of gum or glutinous matter, or it may be otherwise rendered commercially valuable, so as still further to economise the thistle manufacture. In applying the thistle plant to the manufacture of textile materials, the fibres are primarily pre-

pared in the manner already described, and then subsequently treated according to the existing textile processes—such, for instance, as are adopted in the flax manufacture, the thistle fibre being closely allied to the fibre from the flax plant, as regards its general characteristics. Being strong and of good staple, the thistle fibre is particularly well suited for the spinning and weaving processes.

MISCELLANY.

HURD'S HAIR RESTORER!—Judging from the numerous certificates of well-known persons, attesting the efficacy of this article in not only keeping the head clean, and preventing the hair falling off, but in actually producing a new growth of hair on bald heads—even in some cases after several years of baldness, we can but believe that it possesses restorative properties scarcely found elsewhere, and think that persons wishing to preserve their hair, or produce a new growth, would look in vain for a better article for that purpose.

WHY DO TEETH DECAY?—In a short paragraph on this subject, our friends of the *Scientific American* say: "It is our opinion that if more coarse, *hard* biscuit were eaten in early life, to exercise the teeth, they would be less liable to early decay." We think so too, beause such an application of force would eject them from their sockets before they had "much of a chance" to "decay." But the idea of *exercising* teeth is as novel to us as would be the exercise of toe and finger nails. We don't think that is quite up to the proper standard of a "scientific" oracle.

OZIER WILLOW.—The first person who attempted to cultivate this profitable crop, systematically and successfully, in this country, it is said, is Mr. John Reed, of Staten Island. At this time, Dr. C. W. Grant, of Newburgh, N. Y., is, perhaps, the most extensive cultivator. He grows nearly a hundred varieties.

GEORGIA MARBLE.—Two specimens of marble—one of beautiful white color, almost translucent, of a very fine grain, and susceptible of very high polish; the other variegated, and exceedingly beautiful—have been discovered in Cassville, Georgia.

NEW BOOKS.

WESTWARD, Ho! THE VOYAGES AND ADVENTURES OF SIR AMYAS LEIGH KNIGHT. By CHARLES KINGSLEY. Boston: Ticknor & Fields, 1855.

Kingsley, who is the author of "Alton Locke," &c., has here opened a new vein for himself, to the working of which he has brought all the skill he has manifested on other occasions. It is, so far as we know, a vein untouched by any other hand. It brings before us the country life of the middling classes in England, in the age of Elizabeth, when the knight errantry of the past was dying away, or rather was breathing its own spirit of daring and adventure into the more practical life which was dawning upon mankind. We are introduced here to Raleigh, not as the courtier, but as the general and voyager, to Edmund Spencer, Drake, Frobisher, Hawkins, and many others whose names the world will not willingly let die. The scene changes from England to the wilds of South America, with an interlude in Ireland, and after adventures, many and wonderful, closes with the events attending the destruction of the Spanish Armada—a grand finale. The least successful part of the work is the love-story, which, of course, accompanies the grander acts, yet this, too, is not without interest.

THE COMPLETE WORKS OF SHAKSPEARE, including his Plays, Poems, and Life, from the Original Text, carefully collated and compared with the editions of Knight, Hallowell, and Collier. With Historical Introductions and Notes, explanatory and critical. Illustrated, &c. Published by Martin & Johnson, 91 Walker-st., N. Y.

A new edition of Shakspeare may, to some of our readers, appear unnecessary; but we think otherwise, and for several reasons. Among these reasons are the fact that every new edition probably multiplies his readers; and another, still more important, which is applicable not to all, but to this, we have as yet no elegant American edition of this great writer. Shakspeares, indeed, we have, in one volume, with type to ruin thousands of eyes, and in more than one, in which the defects are only the more conspicuous. This edition is in quarto form, and it is an elegant edition. The whole execution is elegant, whether paper, or printing, or engravings. There will be about forty numbers, each 25 cents, and each having a handsome illustration.

No. 1 has an engraved title-page, and an elegant portrait of Shakspeare, surrounded by scenes and characters illustrating his plays. In the 2d, is a full-length portrait of Forrest as "Hamlet," a good likeness. In the 3d, a scene from "Much Ado About Nothing." In the 4th, likenesses of Charlotte and Susan Cushman, as in "Romeo and Juliet," Act. 3, Scene 5. In the 5th Anne Page and Slender, &c. The engravings are executed in a very superior manner, and the publishers deserve an extensive patronage. Specimen numbers will be sent to order, if 31 cents and postage is enclosed to us or the publishers.

PRACTICAL LANDSCAPE GARDENING, with Reference to the Improvement of Rural Residences, giving the General Principles of the Art, with full Directions for Planting Shade Trees, Shrubbery, and Flowers, and Laying Out Grounds. By G. M. KERN. Cincinnati: Moore, Wilstach, Keys & Co., 1855. 328 pp. Price, $1,50.

The title of this book explains its purpose, and that purpose is ably and fully carried out. The first part is an exposition of the theory and practical operations of landscape gardening as an art of design and taste. The second explains its adaptation to pleasure grounds, the farm, cemeteries, etc. Directions for the kitchen garden are added. Twenty-two illustrations are given. Mr. Kern shows that his superior advantages for acquiring a thorough knowledge of this subject have not been neglected. This volume is full, thorough, judicious, and well worthy the notice of all owners of rural dwellings. It is for sale by C. M. Saxton.

DE BOW'S REVIEW FOR APRIL.—This number contains the usual amount of current information, under the heads of "Literary and Miscellaneous," "Agriculture and Horticulture," "Home and Foreign Commerce," "Mining, Manufactures, and Internal Improvements," and "Education." Among the articles are "The South and the Union;" "Practical Effects of Emancipation," by D. J. McCord, of South Carolina; "Selection of Seed in Agriculture," by J. W. Scott, of Ohio; "Public Debts and Securities;" "Sugar Trade of the United States;" "Southern Convention of New-Orleans;" "Common Schools and Universities, North and South," &c., *&c.* The editor is again devoting his entire energies to the work, and urges prompt remittances from subscribers, as well as an increase of their number. He can supply the back numbers of any series from the beginning, or a digest of the whole work, in three octavo volumes, for $6, postage free. Address, New-Orleans and Washington City. It is a favorable season to subscribe.

PUTNAM'S MONTHLY.—This popular magazine is now published by Messrs. Dix & Edward, who have become the proprietors, with a new editorial department. A card from Mr. Putnam assures us that "in all departments of elegant literature, criticism, popular instruction and amusement, the new management has already secured the promise of most hearty co-operation from the best writers;" and he adds—"We have no hesitation in assuring the readers and contributors of the magazine, that they may rely with entire confidence upon the future character of the work, and that the only change will be for the better. It will continue to have our own active co-operation, and all orders for the trade will be supplied by us as heretofore." Office, as before 10 Park Place.

MERRIE ENGLAND. Travels, Descriptions, Tales, and Historial Sketches. By GRACE GREENWOOD. Twelve Illustrations by Devereux, and Vignette. Boston: Ticknor & Fields, 1855. 261 pp.

Grace Greenwood needs no commendation from us. This handsome volume is honorable to the publishers, and is worthy the eminent author. The selection of topics is excellent. These are, Stratford upon the Avon, Newstead Abbey, Sherwood Forest, Nottingham Castle, Warwick Castle, Lincoln Cathedral, and York Minster; Kenilworth Castle, London and the Tower, Westminster Abbey, and the new Palace of Westminster. Under the Tower, we have Ladies Jane and Catherine Grey and Arabella Stuart.

THE FLOWER GARDEN; or, Breck's Book of Flowers. By JOSEPH BRECK. Second thousand. Boston: John P. Jewett & Co., 1851.

Mr. Breck is a gentleman of education and large experience. He formerly edited the New-England Farmer, and the Horticultural Register. He is, also, and for many years has been, one of the prominent members and an officer of the Massachusetts Horticultural Society. We regard his opinions as worthy of especial attention, while his years of careful observation and constant practice entitle him to the respect of the wisest and most successful. We commend this book especially to those for whom it was more especially designed, the amateur and the unpractised.

THE PRACTICAL FRUIT, FLOWER, AND VEGETABLE GARDENER'S COMPANION, with a Calendar. By PATRICK NEILL, L. L. D., F. R. S. E, etc.; adapted to the United States from the Fourth Edition. Revised and Improved by the Author. Edited by G. Emerson, M. D., Editor of Johnson's Farmers' Encyclopedia. With Notes and Additions, by R. G. Pardee; with elegant Illustrations. New-York: C. M. Saxton & Co., 1855. 402 pp.

This is a good book, with well executed engravings. We have not had time for a thorough examination, but a partial reading has given us a very favorable opinion of its merits. We shall notice it further hereafter.

THE AMERICAN FRUIT BOOK. By S. W. COLE. Boston: John P. Jewett & Co., 1854. Twentieth thousand.

This little manual, of 288 pages, contains *multum in parvo*—viz: directions for raising, propagating, and managing fruit-trees, shrubs and plants, and a description of the best varieties of fruit, with numerous engravings. On these subjects, Mr. Cole was excellent authority, and he condensed into this little volume the results of many years' experiments and observation. Its extensive sale shows the estimation in which it is properly held by the public.

SABBATH-MORNING READINGS ON THE OLD TESTAMENT. By Rev. JOHN CUMMING, D. D., F. R. S. E., etc. THE BOOK OF LEVITICUS. Boston: John P. Jewett & Co., 1855. 347 pp.

The works of this eminent author, who has no equal in this department, have passed more than once under our notice, and with our unqualified approbation. This volume is worthy of the previous issues. No work within our knowledge can take the place occupied by this series.

THE DAILY LIFE; or, Precepts and Prescriptions for Christian Living. By Rev JOHN CUMMING, ETC. John P. Jewett & Co., Boston. 279 pp.

This volume, by the author of the preceding, is intended for "those who are busy by day, and very weary at eventide,"—a very numerous class,—for whom "we require, not arid dogmas, however orthodox, but warm joys, sustaining strength, cheering hopes, and inspiring expectations; we need, also, direction, guidance, encouragement." How well this idea is carried out, those familiar with this learned author need not be informed.

THE PRACTICAL LAND-DRAINER; a Treatise on Draining Land, etc. Numerously Illustrated. By J. MUNN, Landscape Gardener. New-York: C. M. Saxton & Co., 1856. 186 pp.

This is a good treatise on a most important subject. Mr. Munn is well versed in this department, and has produced a book worthy of general attention. The directions are full and generally judicious, and quite sufficient as a guide to any farmer. Our readers may notice other references to this volume in this or in future numbers.

THE DAILY MONITOR; being a portion of the Scripture, an Anecdote, and a Verse of a Hymn, for every day of the year. By Rev. JOHN ALLEN. With an Introduction, by Rev. E. N. Kirk. Boston: John P. Jewett & Co., 1855. 219 pp.

This little volume is handsomely printed, and the plan is well carried out. The introduction, of only five pages, is worth the price of the book.

All these publications of Jewett and Co. are in the usual excellent style of that efficient house.

A BOY'S ADVENTURES IN THE WILDS OF AUSTRALIA; or, Herbert's Note Book. By WILLIAM HOWITT. With Illustrations. Boston: Ticknor & Fields, 1865. 359 pp.

Our young author says, on his first page, "things are very fond of flying in this country. The squirrels fly; the grasshoppers fly; the mice fly; and I see all sorts of seeds flying at a great rate. I shall, therefore, let my thoughts and observations fly on paper to old England, for it is an old proverb that 'at Rome you must do as the Romans do.'" This light, pleasant style is characteristic of the volume.

NEW MUSIC.

HORACE WATERS, 333 Broadway, whose advertisement of Pianos, &c., has been published in this journal, continues his publications of music as usual. Among the latest are "Light and Shade," by Oscar Comettant, "Le Trefle Waltz, Polka, and Schottish;" and among the vocal pieces, "The Fireman's Heart is Bold and Free," a very taking song; "Twilight is Chasing the Last Beams of Day," simple and pretty; "One Day Out," a sea song; "Mary's Beauty," "Our Boys," &c.

WM. HALL & SON issue among their new pieces, "The Miner's Tribute Waltz," by J. A. Fowler; "Rigoletto," Opera de Verdi; ballad, "La Donna e Mobile," by W. V. Wallace; and among the vocal pieces, "Music Murmurings in the Trees," by Wallace, adapted by Jarvis, song and quartette, very beautiful, 25 cents; "Hazel Dell," by Wurtzel, with variations by Wm. Iucho, rather difficult, but very good; "The Wild Tiadatton," ballad, by Chas. Jarvis, very pretty and simple.

List of Patents Issued

FROM FEB. 27, TO APRIL 3, 1855.

Geo. C. Allen, of Key West, for improvement in machines for cleaning sisal hemp and stripping seed from broom corn.

John Allen, of New-York, for improvement in life boats.

J. J. Anderson, of Beaver, Penn., for improvement in cook stoves.

Harmon W. Ballard, of Burlington, Vt., for improvement in springs for wagons.

Wm. Ballauf, and Fred. Wurth, of Cincinnati, for improvement in guards for door locks.

E. C. Benyard, of Philadelphia, for safe catch for breast-pins, &c.

Nehemiah B. Chase, and Chauncey W. Saunders, of Wilkinsonville, Mass., for improvement in hand cultivators.

Charles Crum, of Hudson, for improvement in processes for making bread.

Rene Charles Demolon, and George Alexander Charles Thurmeyssen, of Paris, France, for improvement in treating fish for manure and oil.

Julius C. Dickey, of Saratoga Springs, for improvement in harness saddle-trees.

F. A. Gleason, of Rome, N. Y., for machine for cutting mitre and other joints.

Robert B. Gorsuch, of N. Y., for direct double-acting hydraulic steam pump.

Guy H. Hubbard, of Shelburne Falls, Mass., for improved auger handle fastening.

Marcus F. Hyde, of Burlington, N. J., for improvement in soda water apparatus.

Geo. Martz, of Pottsville, for improvement in coal screen.

Sam. W. Powell, of Tuscarora Valley, Penn., for improved mill for grinding and bolting sumac.

Jesse Reed, of Marshfield, Mass., for improvements in steering apparatus.

Newton D. Robins, of Edinburgh, Ind., for improvement in the combination of an air chamber water cooler and force pump in soda fountains.

Edward Rice, of Canandaigua, for improvement in railroad car coupling.

John W. Smith, and John S. Gallagher, Jr., of Washington, for improved fire-place.

John Stainthorp, of Buffalo, for improvement in machines for making candles.

Linus Stewart, of Washington, D. C., for improvement in the mode of constructing saw plates and setting teeth therein.

Wm. L. Whittaker, of Cumberland, Maryland, for improvement in machines for stuffing horse collars.

John Williams, for improved arrangement of exhaust pipes in locomotive engines.

William W. Willis, of Orange, Mass., for improved mode of extracting stumps.

Virgil Woodcock, of Swanzey, New-Hampshire, for improvement in the arrangement of desks in school-rooms.

Dexter H. Chamberlain, of West Roxbury, assignor to Henry Woodward, of Boston, Mass, for improvement in apparatus for purifying illuminating gas.

John H. Manney, of Rockford, Ill, and Henry Marcellus, of Amsterdam, N. Y., for improvements in grain and grass harvesters.

Wm. E. Arnold, Rochester, improved sash fastener.

Theophilus A. Ashburner, Philadelphia, improvement in bottle stopper fastenings.

James M. [illegible]tturn, New-York, for polishing apparatus for watchmakers' lathes.

Alanson Brown, Rochester, improvement in machines for turning, boring, and slotting metals.

Ze Butt, of Lincolnton, North Carolina, improvment in self-loading carts.

C. M. Eakin, West Philadelphia, improvement in excluding dirt from grooved railroad rails.

Ebner Foster, Fairton, N. [illegible], improvement in hoop jacks for sailing vessels.

Niblo T. Greene, Bridgeport, Conn., improvement in cut of valves for steam engines.

H. Ludington and S. R. Supton, Addison, Pa., improvement in seed planters.

J. W. Heard, Providence, improvement in gas regulators.

Joseph Hyde, New-York, improvement in screw wrenches.

Louis Koch, New-York, for machines for making paper boxes.

Geo. Leach, Oswego, improved grain cleaner.

Wm. W. Guiwits, Rodgersville, N. Y., improvement in sleighs.

Robert C. Mauck, Harrisonburg, Pa., improved ditching machine.

Andrew Mayer, Philadelphia, improved valves for gas burners.

Jas. McCracken, Bloomfield, N. Y., improved evaporating apparatus.

Hiram Moore, Charleston, Mich., for method of operating pumps by wind.

Elijah Morgan, Morgantown, Va., improvement in washing machines.

Edw. F. Overdeer, Chattanoga, Tenn., improvement in fire-extinguishing compositions.

Frederick C. Rider, Providence, improvement in lamps.

Jesse Russell, Elkton, Ky., improvement in brick-kilns.

Christopher Walter, Bridgeport, improvements in ordnance.

Henry Lawrence, New-York, improved safety ferry bridge.

Frederick W. Urann, of Saxonville, Mass., improvement in curtain rollers.

Edward Vaughn, Alliance, O., improvement in stump machines.

Wm. Warwick, Birmingham, Pa., improvement in door locks.

Geo W. Wheatly, Harrodsburg, Ky., improvement in eaves gutters for houses.

Rollin White, Hartford, improvement in breach-loading fire-arms.

John C. Schooley, Cincinnati, improvement in process of curing meats.

Jas. Smith, Mendon, N. Y., improvement in the manufacture of stone paste boards.

Fred. S. Stoddard, Litchfield, Conn., improvement in machinery for spinning wool.

James H Sutton, Honesdale, Pa., improvement in air heating furnace.

Isaac P. Trimble, Livingston, N. Y., improved apparatus for operating ventilators.

Chas. Cunningham, Nashua, assignor to John C. Pedrick, Boston, improvement in benzole vapor apparatus.

Samuel A. Knox, Worcester, assignor to Ruggles, Nourse, Mason & Co., of same place, improvement in cultivators.

Abel Barker, Honesdale, Pa., for improved rotary pump.

C. F. Bauersfeld, Cincinnati, Ohio, for clamp and mouth piece for lumber-jointing machine.

E. A. Bigelow, Chicopee, Mass., new mode of preparing woolen roving; same, improvement in spinning wool.

Ransom Cook, Shelburne Falls, Mass., improved machines for turning the lips of augers.

Andrew Diets and Y. G. Dunham, of Raritan, N. J., improved grass and grain harvesters. Antedated January 2d, 1855.

Levi. B. Darling, Providence, R. I., improved processes for refining jewelers' scraps.

W. R. Elliot, Plattsburgh, N. Y., combination of speed and resistance governors.

L. W. Ferris, Owego, N. Y., for improvement in chairs.

H. A. Frost, Worcester, Mass., improved mode of supporting table leaves.

H. D. Ganse, Freehold, N. J., improved cultivator.

L. D. Gilman, Troy, N. Y., improved screw wrenches.

Warner Groat, Troy, N. Y., mode of packing journal boxes.

W. H. Guild and W. F. Garrison, Brooklyn, N. Y., improvement in operating valves in direct-acting steam engines.

David S. Harris, Coventry, R. I., improvement in looms.

R. G. Holmes and W. H. Butler, New-York, for a new fire-proof filling for safes.

Thaddeus Hyatt, N. Y. city for illuminating vault covers.

Wm. S. Irish, Middlebury, Ohio., improvement in looms.

Y. S. Kirk and W. H. Elliott, Plattsburgh, N.Y., improved grate bar.

Urias Kimble, Penfield, N. Y., improved tool for boring hubs to receive boxes.

S. B. Knight. North Providence, R. I., improved method of chalking lines.

Charles Leavitt, Quincy, Ill., improved shingle machine.

Thos. Ling, Shelby, Ohio, a self-adjustable or anchoring pump.

John McNeill, N. Y. city, improved charcoal furnace.

Hiram Moore, Climax, Mich., improved seed planter.

G. W. Palmer, Boston, Mass., improved bill holder.

David Sholl, Cincinnati, improved coffins.

W. S. Smith, Cedar Rapids, Iowa, improvemrnt in current wheels

H. G. Tyer and John Helm, New-Brunswick, N. J., improvement in the manufacture of boots and shoes.

M. Ward, Owego, N. Y., for improved seed planter.

R. P. Vanhorn, Jackson Town, O, improved cultivators.

Joseph Walker, Dover, Eng., improvement in hulling cotton seeds. Patented in England, July 20, 1854.

Wm. P. Zane, Woolwich, N. J., improved cultivators for sweet potatoes.

Abraham Gesner, Williamsburg, N. Y., assignor to 'The Asphalte Mining and Kerosene Gas Co.,' for processes for making Kerosene.

Smith Gardner, N. Y. city, assignor to Edward Kellogg, of Brooklyn, N. Y., improvement in the manufacture of zinc white.

R. M. Wade, Wadesville, Va., improved lubricator.

Henry W. Adams, New-York, improvement in factitious oils.

James P. Arnold, Louisville, improvement in presses.

Richard Baker, Newark, improvement in the manufacture of white lead by precipitation.

Abel Baker, Honesdale, method of lubricating pistons of air pumps.

Chester B. and Benj. S. Borden & Aaron R. McLean, of West Dresden, N. Y., improvement in seed planters.

Louis Bollman, N. Y., improvement in condensers in steam engines.

Thos. Brown, London, England, improvement in ship's riding bits.

Levi M. Dehart, Reading, Pa., adjustable paddle wheel.

Richard V. DeGuinon, Brooklyn, improvement in anchors.

Sam. W. Frost, Boston, improved safety port for coal holes.

Thomas Goodrun, Providence, R. I., improvement in valves for steam engines.

Robert B. Gorsuch, New-York, direct acting hyraulic steam pump.

Smith Groom, Troy, improved hose coupling.

Thomas J. Hall, Tawakana Hills, Texas, improvement in plows.

Gustavus Hammer, Cincinnati, O., improved valve for wind musical instruments.

Luther Houghton, Philadelphia, improved mode of loading rifled cannon.

Barton, H. Jenks, Bridgeburg, Pa., improvement in looms. Ante-dated January 6, 1855.

Benjamin F. Joslyn, Worcester, for double acting pump.

Wm. J. Keeney and James R. Tarbox, Sullivan Co., Ind., improvement in rakes and hay elevators.

Geo. Martz, Pottsville, Pa., improved apparatus for hoisting and dumping coal cars.

Ebenezer Mathers and Wm. D. Seigfried, Morgantown, Va., apparatus for feeding paper to hand printing presses.

James B. Mell, Riceboro', Ga., improvement in cotton gins.

Henry Mellish, Walpole, improvement in locks.

F. H. Moore, Boston, improvement in coal hole covers.

Rollin White, Hartford, Conn., improvement in breech-loading fire-arms.

Thomas Moore, Fair Haven, Vt., improved stove-pipe tube.

Andrew Murtaugh, N. Y., improvement in pulleys for dumb waiters.

Ives W. McGafly, Syracuse, improved seed planter.

Fred. A. Peterson, N. Y., fire-proof ceiling.

Stephen R. Roscoe, of Carlisle, N. Y., fire escape ladder.

Alpheus D. Smith, Meredith, N. Y., improvement in railroad car seats.

Arcalous Wyckoff, Columbus, O., chain pumps.

Charles and Anna C. Wilhelm, Philadelphia, improved protector in lamp shades.

C. Gustav Maeller, Charleston, improvement in bank locks.

Rollin White, Hartford, improvement in repeating fire-arms.

Rollin White, Hartford, improved repeating fire-arms.

Noah Warlick, Lafayette, Ala., improvement in plows.

C. Williams, Jackson, Tenn., improved excavating machine.

Enos Woodruff, Elizabethtown, N. J., mechanism by which approaching vehicles open and close gates.

Francis L. Smithson, Mecklenburgh county, Va., improvement in cultivators.

Hiram Strait, Covington, Ky., improved arrangement of means for freeing steam boilers from sediment.

Geo. H. Soule, of Jersey City, improved breech-loading fire-arms.

Wm. Stoddard, Hingham, Mass., improvement in folding beadsteads.

Benjamin T. Trimmer, Perma, N. Y., improved grain cleaner.

Geo. W. Edgcomb, Lima, Ind., improvement in washing machines.

Charles Clarent, N. Y., assignor to himself and Geo. P. Field, improvement in harrows.

Ozro A. Crane and Henry J. Lewis, Green Point, N. Y., assignor to Ozro J. Crane, aforesaid, improvement in scrapers for removing dirt from boots and shoes.

John Hartshorn and Dexter H. Chamberlain, Boston, assignor to John Hartshorn, aforesaid, improvement in fixtures for curtain rollers.

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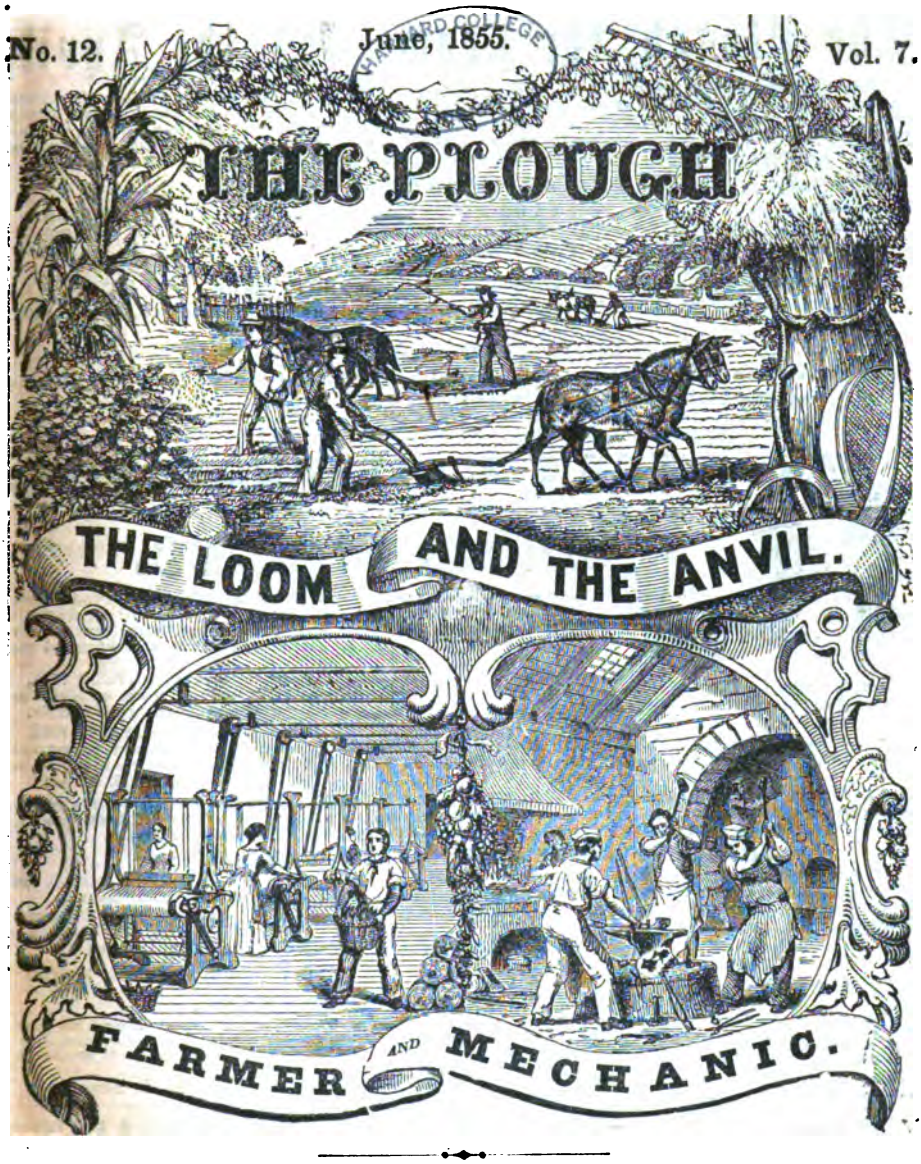
No. 12. June, 1855. Vol. 7.

HARVARD COLLEGE



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HURD'S HAIR RESTORER,

FOR PRODUCING HAIR ON

BALD HEADS.

This Preparation has never failed to produce a new growth of Hair on Bald Heads, when used according to directions. It is designed expressly for the purpose, whereas, nearly, if not all the various preparations advertised for that purpose are, in reality, designed merely for the toilet, and are composed of oils, alcohol, &c., injurious rather than beneficial to the scalp.

POQUETANNOCK, Conn., Feb. 9, 1855.

"This is to certify that I have been using Hurd's Hair Restorer about three months, and now, where my head was bald, it is covered with a new growth of hair." Capt. GEO. G. BENJAMIN.

POQUETANNOCK, Conn., Feb. 14, 1855.

"This is to certify that I have been using Hurd's Hair Restorer about three months, and where my head was entirely bald, and had been about twenty years, it is covered with a new growth of hair, at least three inches in length." ALICE ADAMS.

The *Petersburgh (Va.) Intelligencer* says of HURD'S HAIR RESTORER: "This preparation seems to be efficacious for the restoration of the hair upon bald heads. We have seen the testimony of persons well known to us, who have used the compound successfully, thereby corroborating the opinion of its restorative energy."

For a Superior Article for the Toilet use HURD'S GOLDEN GLOSS.

This preparation is highly perfumed, and gives to the hair a dark, soft, glossy, and lively appearance, which can not be obtained from any other article. It effectually cleanses the scalp, and keeps the head clean and healthy.

HURD'S HAIR RESTORER is sold at $1, and HURD'S GOLDEN GLOSS at 25 cents per bottle, by Druggists generally.

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THE undersigned offers for sale about two millions of acres of land in the Western part of Virginia, comprising some very choice lands. Price less than half of what is demanded for a similar quality of land in Iowa, Wisconsin, and Minesota, with the additional advantages of a more temperate climate, and much less cost for transportation of produce to the sea-board. For full particulars, call personally, or address by letter,

June, 6m. JOHN M. LEITCH, No. 9 Spruce Street, Room, No. 2, New-York.

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WITH IRON LEVERS AND STEEL BEARINGS, FOR FARMERS' USE.

IRON SCALES &C. &C.

New-York State Agricultural Society,
State Agricultural Rooms, Albany, Feb. 20, 1854.

At the Show of the Society, held at Buffalo, in September last, a *Cattle-weighing Machine* was erected by Messrs. T. & B. Fairbanks & Co., of St. Johnsbury, Vt. The Scales of Messrs. Fairbanks were selected as most likely to give satisfaction to the exhibitors of fat cattle. The judges appointed on miscellaneous articles awarded the first premium of the Society for the machine which was erected by them,—and the judges on fat cattle, who superintended the weighing of all cattle exhibited, expressed their approbation of the great accuracy of the machine.

BENJ. P. JOHNSON, Cor. Secretary.

Sold and Warranted by FAIRBANKS & Co., 89 Water Street, New-York.

The Plough, the Loom, and the Anvil.

VOL. VII. JUNE, 1855. No. 12.

AMERICAN INDUSTRY.—VARIETY OF PURSUITS.

[IN our last number we gave a partial view of this subject, illustrated by statistical tables. Before we go further on the exhibition of our own opinions, we are very happy to present, in this connection, a few extracts from an admirable address recently given at Charleston, S. C., before the South Carolina Institute, by Hon. JAMES L. ORR.]

The meagre supply of mechanical industry is a serious impediment to our prosperity. We should possess it in such abundance as to have every want supplied in that department by mechanics residing among us, unless, from some adventitious cause, it can be more cheaply procured elsewhere; and this distribution of labor is as necessary to advance agriculture as other branches of industry. Do we now possess it? Who can answer affirmatively? In 1850, the artisans and mechanics numbered 9,993, whilst all other occupations amounted to 58,556, showing that less than one-sixth of our white population are engaged in this extensive branch of industry, and if the labor of our slaves be taken into the estimate, it may safely be assumed that less than one-fifteenth of all the labor in this State is thus employed. In New-York, the artisans and mechanics number 252,747, and all other occupations 635,933, giving nearly one-third of her population to the mechanic arts. And let it be borne in mind that New-York is a great *agricultural* State. In Maryland, there are 38,010 artists and mechanics, and all other employments number only 86,866, showing that one-third of her entire white population are pursuing the mechanic arts. There is another comparison which the late census suggests. Maryland's population is 583,034, whilst that of South Carolina is 668,507. The improved lands in Maryland are 2,797,905 acres, in South Carolina 4,072,651 acres; the unimproved lands in Maryland are 1,836,445 acres, and in South Carolina 12,145,049 acres; and yet the remarkable fact is exhibited that the cash valuation of the improved lands in Maryland is greater than in South Carolina, although the quantity is less by nearly one-half. The valuation in the former is $87,178,545, and in the latter $86,568,038. This indicates a high state of agricultural prosperity in Maryland, which may well be emulated. What is in the soil or agricultural productions there, so superior to South Carolina? There is a more judicious distribution of labor there, and her large city, Baltimore, has appreciated the value of lands by furnishing a ready cash market for agricultural products grown on them. It is the labor and

enterprise of Baltimore mechanics that has swelled her area and wealth in a few years from a small town to a majestic city.

In 1790, the population of Baltimore was 13,503, and Charleston 16,359; in 1850, Baltimore had grown to 169,054, and Charleston to 42,985. At the period when this comparison commences, the exports of Charleston were more varied and valuable; the commerce she enjoyed more enriching; the interior country supporting her more fertile and extensive; her geographical position more favorable by reason of freedom from the competition of other cities; in all these respects Charleston had the advantage of Baltimore. Now their situations have changed, and Baltimore quadruples the population of our favorite city, and her commerce, tonnage and prosperity have gone on increasing in the same wondrous manner as her population.

Why is it so? Let a stranger visit the two cities and he will assign you the reasons. He will first tell you that no great city can be built up simply by exporting great staples. She must give employment to other labor and pursuits than to commission merchants. She must have her artisans and mechanics. He will see in Baltimore extensive ship-yards enclosing her harbor, hundreds of ship carpenters actively employed in constructing new boats and vessels, and in repairing old and crazy hulks; and perhaps whilst admiring the active industry of the scene around, he will discover a vessel sailing into port with ship-lumber from Charleston. Baltimore ship carpenters are to realize all the profits arising from working the lumber. If a Charleston merchant desires to purchase a vessel for the foreign or coasting trade, he sends to Baltimore and pays the $50,000 demanded for it, when his own city has received, for every stick of timber in it, but $10,000. To whose support and gain does the difference of $40,000 go? How many ship carpenters would be employed a whole year on such a sum? What activity would be infused in every branch of business in your city if twenty such vessels were annually constructed in your own harbor? What would be the increased sales and profits of your retail traders, your grocers, your innkeepers, and provision dealers. Why not do your own ship-building by your own carpenters? There is no natural barrier in your way. The season of your epidemic disease, should it return unfortunately every year, is shorter than the rigors of an inhospitable winter at Kittery, Portland, Boston, or New-York, when labor is almost entirely suspended by their workmen. The lumber they use is taken from your wharves. Why not put the labor on it before committing it to the strifes of ocean, and build up and enrich your own mechanics? The stranger will see in Baltimore thousands of mechanics at their forges, furnaces, and founderies, in their shot towers, marble and stone yards, shops, and machine shops. Nearly every square supports its tall chimney, with the black smoke issuing from the furnace of an engine driving machinery at its base. How many smoke stacks would the stranger count in Charleston? How many engines, propelling machinery, would he be able to enumerate? Was not the steam engine some years back a *malum prohibitum* within the corporate limits of this city? How many carpenters at your ship yards, mechanics at your forges and founderies, and machinists at your work-shops, would he count? These hints furnish some of the prominent reasons why Baltimore has outstripped Charleston, and indicate means of speedily and permanently promoting her languishing prosperity.

* * * * * * * *

It is unnecessary that I should point out other branches of mechanical industry; the examples given establish your greatest want; and until artisans

and mechanics crowd your city, I fear that your hopes of a greatly enhanced prosperity are illusory. * * * * * *

We must have architects and educated mechanics to improve the style of our buildings; and iron-founders, marble yards, and stone-cutters to beautify and ornament the dwelling places of the dead.

The State is in want of additional manufactories, and I use the word in its comprehensive sense—to work by machinery, into forms convenient for use, all kinds of raw materials. Columbia is admirably located for a great manufacturing town. Water, the cheapest of all motors yet discovered, is furnished in the greatest abundance near the city, over the shoaly beds of the Broad Saluda and Congaree rivers. An unlimited amount of machinery could be propelled, and a great variety of works and fabrics produced. It is easy of access by the railroads converging within its limits, and is placed thereby within a few hours of every description of raw material furnished by the State. Nearly all the upper districts are likewise prodigally supplied with water-power. The streams have their sources in the mountains, and are fed by bold, unfailing springs, yielding in their channels a uniform regular current, exposed neither to congelation in the winter nor to evaporation or absorption in the summer. This secures us a striking and important natural advantage over the Northern and Eastern States, for the severity of their winters freeze the streams and ice-bind their wheels so as to suspend for several months the working of all machinery driven by water, and, as a consequence, curtails profit by suspending all labor depending upon such agency, to the detriment of the stockholder. Our operations may be continued the year through without any such interruption or drawback on the profits of the investment. The extraordinary low price at which water-power may be purchased, being really little beyond the intrinsic value of the land usually annexed to it, should induce enterprise and capital to cover the base of every shoal in South Carolina with machinery for the extensive and economical manufacture of all useful fabrics and implements.

The transportation to market of the raw material is just as expensive as an equal amount of the manufactured fabric, but the pound of the latter brings into the country three times the amount of cash brought in by the former. Why may we not embark extensively in this branch of industry, with the positive assurance of our ability to undersell all competitors in these articles in every market?

Other experiments in manufacturing have crowned the hopes of their authors with gratifying success, and have illustrated genius and capacity of a high order in our mechanics. Paper mills in various localities have been erected, and their fabrics reflect credit upon the operatives, and establish the triumph of the experiment. Much of the letter and cap paper used in the State, and most of the paper for the newspaper press in this and other Southern States, is manufactured in South Carolina mills, and at a fairly remunerative profit to owners and stockholders. * * *

Your founderies here and in the interior are beginning to compete with older establishments in other States. Let them make a character by the elegance and durability of their works, increase their force and capital, press the enterprise with becoming energy, and they will be munificently appreciated by a discriminating public.

There is one branch of mechanical manufacture which, from its rapid advance and high perfection, is entitled to the special laudation of every friend of improvement. Thousands of dollars, annually expended, a few years back, in New-Jersey, New-York, and Connecticut, for carriages and other

wheeled vehicles, are now expended in our midst to pay domestic mechanics for the same work executed in their shops. Many of the towns in the State can bear testimony to the stream of prosperity turned in upon them, by the establishment of such manufactories in their midst. If you doubt the skill of the mechanics engaged in this branch, look at the specimens on exhibition here. Will they suffer in a comparison with any model vehicles from any foreign shop, in the elegance of finish, skill and fidelity in construction, durability of material, symmetry of model, or economy of cost? May I not go farther, and challenge any foreign shop to produce a specimen equal to some now on exhibition here?

The multiplication of carriage manufactories in the State has not only diffused life and activity into many other departments of industry, but has put wealth into the pockets of the proprietors, and has added to the comforts and pleasures of the people. * * * * *

We want manufactories and machine shops. They co-exist together. We want enterprising, intelligent, inventive mechanics. We want them to increase until their labor will furnish us every machine and fabric for man's use that can be as cheaply matured here as elsewhere. How are these wants to be supplied? Let our citizens cease to expatriate themselves from the bosom and kind affections of our common mother, and devote themselves to the grateful task of fostering and warming the condition in which she now languishes. Let them not deceive themselves by the delusive hopes of sudden wealth in new and distant lands, and let them resolve that when "life's fitful fever" is over, that their bones shall repose side by side with their fathers, beneath the native soil. Take it all in all, we have the best country which I have seen in the broad expanse of this great confederacy. Let us be content to occupy, and improve, and develop it. Providence has blessed us with every variety of soil and surface, climate, production and resources, with no stinted hand. Let us do something worthy the munificence we enjoy, and bequeath to our children a heritage and country greater than we received from our fathers. * * * * *

The idea was once prevalent, with wrong-headed people that manual and mechanical labor was inconsistent with intelligence, gentility, and dignity of character. Most happily such an absurd sentiment is exploded in the minds of all sensible men and women. Labor is the tax upon all animated existence for its preservation. The ant, the reptile, the beasts of the fields and the fowls of the air, all toil for food. Man, the master of them all, endowed with intellect, and created with appetites and desires to exercise and develop his capacious faculties, is bound also to labor, and to labor by the omnipotent fiat of Jehovah. When our common progenitor was expelled from the green bowers of Eden, it was under an angered, though just sentence, that "in the sweat of thy face shalt thou eat bread till thou return unto the ground." Henceforward the spontaneous productions of the earth failed to sustain man. Can labor be disreputable since its requirements are universal and its necessities of Divine origin?

The progress of civilization is constantly multiplying and expanding the demands upon labor, and the judicious means for increasing its products, have engaged the best men in every age. Men are entitled to that respect and consideration from the community, which their moral worth, intelligence, and usefulness justly inspire, without regard to the occupation pursued. The lawyer and physician labor; and oftentimes the fœtid air of a dark dungeon, or the nauseating odor of a sick room, is more repugnant to the senses and sensibilities than any which the forge or machine shop emits. The educated

youth who masters one or more branches of the mechanic arts, by study and application, has a personal independence, and a prospect for the future, to be envied by the brother who has chosen a learned profession. That is an erroneous public opinion which gives to professional men rank and position of social and intellectual superiority over other occupations. The exclusive business of professional men is intellectual, and if they evince superior attainment within the line of their employment, it is no more than they should accomplish. But to test the amount of intellect required in different occupations, which would require the most comprehensive understanding, the machinist who could construct a steam engine, and adjust all its nice parts, and apply its power to spinning and weaving, or the lawyer who could comprehend the rule in Shelly's case, and expound the statute *de donis?*

We are exceedingly gratified in being able to present so powerful an endorser of our favorite doctrine, and that he hails from a state that has been regarded, perhaps not without good reason, as being far from orthodox on this subject.

In resuming our own train of thought, in this connexion, allow us to enquire what it is which gives value to any estate? We answer, INDUSTRY, and industry alone. In nations and communities that are thoroughly indolent, having no regular occupation, all property is of but little value. Could a community be found absolutely without occupation, property there could have no value. Look at our aborigines. We will not ask what was the *cash* value, but what was the actual value of those wilds, or of the productions of those wilds, where they roamed for their prey? It was no more than that of the few acres which now produce an amount equal to that which they appropriated to their use. The gradual increase of industry, as they opened a new source of income by trading with white men, in equal ratio added to the actual present value of those extensive territories, and the possible extent to which this traffic might extend, and the new uses of it, which change of circumstances would obviously bring into being, occasioned an entirely new valuation, both of the land and its products, vegetable and animal, and mineral.

On the other hand, why is it that that small tract, covered by a single building, in State street, in Boston, of which we recently made mention, can command such an enormous price per acre, estimated not by thousands but by millions? Why is it that scores of acres of land on Broadway are worth, in the market, as much hard currency as would be required to cover it all over? It is only, ONLY on account of the extent and variety of industry carried on in this busy city. Diminish the amount of this industry, so that it shall not exceed that of an ordinary country village, and, by the same process, you diminish the value of estates here to the standard of the estates of the country village. If it were possible in any country village to create and sustain the same amount of industry as is found in New-York, or other large city, which has plenty of land around it, as has the country village, so that the competition of land can become equal in the two places, you would thereby raise the prices of all kinds of estates and products, in the village, to city prices. It is English Industry, wisely directed, that has brought into being, on a portion of that small island, an amount of wealth and of power before unheard of.

We hope our readers will ponder on these facts, and give the subject the practical attention it deserves. Meanwhile, we continue our tables of sta-

tistics, each one having a *testimony to* give, to which wise men will not refuse to listen :

In Mr. Corwin's Annual Report, he estimates

Western River Commerce at - - -	$339,502,744
Lake and River Commerce at - -	653,976,202

Mr. Walker, in 1847, estimated the whole annual products of the country at $3,000,000,000.

In the recent volume of the census of 1850, published by Mr. De Bow, the value of the Coasting trade, in 1852, was estimated at $314,473,458, and that of the Foreign trade at $12,119,877, illustrating and proving the truth of the doctrine we recently urged, under the title, "Commerce is King."

In reports made to the Treasury department, in 1853, the commerce of the principal commercial States is estimated as follows :

Massachusetts, - - - - - - -	$16,895,304
New-York, - - - - - - -	66,030,355
Pennsylvania, - - - - - - -	6,255,229
Maryland, - - - - - - -	7,768,224
Virginia, - - - - - - -	3,302,561
South Carolina, - - - - -	15,400,408
Georgia. - - - - - - -	7,371,883
Alabama, - - - - - - -	16,786,913
Louisiana, - - - - - - -	67,768,724

The census of 1850 also furnishes the data of the following tables :

CASH VALUE OF FARMS AND PLANTATIONS.

New-England, - - - - -	$372,348,543
Middle States, - - - - - -	780,842,729
Southern " - - - - -	485,351,555
S. Western " - - - - - -	307,992,713
N. Western " - - - - -	906,582,447

VALUE OF "FARMS, PLANTATIONS, ETC.," IN EACH STATE, TO EACH INHABITANT.

Alabama, - - - -	$83	Mississippi, - - -	$90
Arkansas, - - -	73	Missouri, - - - -	93
Connecticut, - - -	196	New-Hampshire, - -	173
Delaware, - - -	206	New-Jersey, - - -	246
Florida, - - - -	72	New-York, - - -	179
Georgia, - - - -	106	North Carolina, - - -	78
Illinois, - - - -	113	Ohio, - - - -	206
Indiana, - - - -	138	Pennsylvania, - - -	176
Iowa, - - - - -	87	Rhode Island, - - -	116
Kentucky, - - -	158	South Carolina, - - -	123
Louisiana, - - - -	146	Tennessee, - - -	96
Maine, - - - -	94	Texas, - - - -	79
Maryland, - - - -	149	Vermont, - - -	202
Massachusetts, - - -	110	Virginia, - - - -	152
Michigan, - - - -	130	Wisconsin, - - -	93

Mr. Tucker calculated, from the census of 1840, that the value of agricultural products, PER ACRE, was as follows:

New-England,	$1,76
Middle States,	1,84
Southern " (except Florida,)	1,03
S. Western "	70
N. Western " (except Wisconsin and Iowa,)	50

The same census returns (of 1850) furnish the data of the following, by the "true valuation," with the proportionate amount to each inhabitant:

AMOUNT OF REAL AND PERSONAL ESTATE.

States.	"True Valuation."	Tot. Pop.	Share to each Inhabitant.
Alabama,	228,204,332	771,623	$596
Arkansas,	39,841,025	209,897	190
Connecticut,	155,707,980	370,792	419
Delaware,	18,855,863	91,532	206
Florida,	23,198,734	87,445	268
Georgia,	335,425,714	906,185	369
Illinois,	156,265,006	851,470	184
Indiana,	202,650,264	988,416	205
Iowa,	23,714,638	192,214	118
Kentucky,	301,628,456	982,405	307
Louisiana,	233,998,764	517,762	451
Maine,	122,777,571	583,169	211
Maryland,	219,217,364	583,034	376
Massachusetts,	573,342,286	994,514	577
Michigan,	59,787,255	397,654	150
Mississippi,	228,951,130	606,526	361
Missouri,	137,247,707	682,044	201
New-Hampshire,	103,652,835	317,976	323
New-Jersey,	153,151,619	489,555	313
New-York,	1,080,309,216	3,097,394	317
North Carolina,	226,800,472	869,039	261
Ohio,	505,726,120	1,980,329	255
Pennsylvania,	729,144,998	2,311,786	315
Rhode Island,	80,508,794	147,545	546
South Carolina,	288,257,694	668,507	431
Tennessee,	207,454,704	1,002,717	207
Texas,	55,362,340	212,592	260
Vermont,	92,205,049	314,120	294
Virginia,	391,646,438	1,421,661	279
Wisconsin,	42,056,595	305,391	138

In the above table, the general average is $305 nearly.

Average for New-England,	395
Middle States,	305½
Southern "	311¾
S. Western "	301
N. Western "	194¾

In presenting the table, page 643, in our May number, we suggested that "it did not show the exact relation of the different States in respect to the

value of their productions." We shall presently see this very clearly. Not only this, but there is a possibility that the state producing the greatest quantity of a given article may still have so large a population as to be forced to buy of another not producing half so much. That state is in the best economical position, of course, where the ratio of production to the population is the greatest. Such an examination changes very essentially the order of the States, giving the first rank to some of those which are but *medium* States in respect to gross quantity.

We have had time to compute this relative order, only with a few of the States, in relation to four of the most valuable productions, and below give the result of our calculations. We place them first in the order indicated in the table in our May number; that is, in the ratio of actual production. The second column is arranged according to the average quantity produced to each inhabitant:

INDIAN CORN.

1. Ohio.	1. Illinois,	68	bushels to each inhabitant.
2. Kentucky.	2. Kentucky,	63	" " "
3. Illinois.	3. Indiana,	54	" " "
4. Indiana.	4. Missouri,	53	" " "
5. Tennessee.	5. Tennessee,	52	" " "
6. Missouri.	6. Ohio.	30	" " "

WHEAT.

1. Pennsylvania.	1. Illinois,	11	bushels to each inhabitant.
2. Ohio.	2. Virginia,	8	" " "
3. New-York.	3. Ohio,	7	" " "
4. Virginia.	4. Pennsylvania,	7	" " "
5. Illinois.	5. Indiana,	6	" " "
6. Indiana.	6. New-York,	4	" " "

HAY.

1. New-York.	1. Vermont,	2.1	tons to each inhabitant.
2. Pennsylvania.	2. Maine,	1.3	" " "
3. Ohio.	3. New-York,	1.2	" " "
4. Vermont.	4. Pennsylvania	.8	" " "
5. Maine.	5. Ohio,	.7	" " "
6. Massachusetts.	6. Massachusetts	.6	" " "

BUTTER.

1. New-York.	1. Vermont,	39	lbs. to each inhabitant.
2. Pennsylvania.	2. New-York,	26	" " "
3. Ohio.	3. Ohio,	17	" " "
4. Indiana.	4. Pennsylvania,	17	" " "
5. Illinois.	5. Illinois,	15	" " "
6. Vermont.*	6. Indiana,	13	" " "

There is still another distinction that might properly be made were it practicable, viz: a comparison of the *prices* or market value of the product under examination, in different States. This could only be reached by approxi-

* Printed 16 instead of 6, in p. 643—the mistake of the printer.

mation, and the results thus attained would not, perhaps, be more satisfactory, on the whole, than those we have attained in the foregoing calculations. These are certain, so far as reliance can be placed upon the returns of the census.

In the census of 1850, we have the data for the following table of the

ACTUAL PRODUCT OF MANUFACTURING, MINING, AND MECHANIC ARTS.

		Amt. to each Inhabitant.
New-England, - - -	$274,740,063	1.02
Middle States, - -	471,975,751	.74
Southern " - - -	53,635,005	.13
S. Western " - -	26,323,276	.09
N. Western " - - -	186,662,368	.29

This examination, through which we have passed, shows very conclusively the beneficial effects of "diversity in industrial pursuits." The proportion of persons engaged in the various kinds of employment will vary, in such communities, with the demands of the times. What is most profitable will tend to an increase of competition, until it becomes crowded, and, in its turn, it will then furnish hands for some other, offering greater present inducements. Some losses will necessarily happen to individuals, but the community, on the whole, are benefited. With the high prices, which may have disappeared, there is no actual destruction of property, as by a fire or storm. Speculations, if ever so unfortunate in relation to one individual, may be the making of another. But, all the while, the actual property, the material, remains unchanged.

Some states fall far behind others in the amount of agricultural products, but if the people of those states are extensively engaged in other pursuits, we are furnished not only with the reason, but we also find immense values of other kinds, the result of commercial or mechanical industry. But if they produce large agricultural crops, and, at the same time, carry on extensive business, in other departments, we are assured that they are in a highly prosperous condition.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

KISLICHY.

THE farmer, who needs a wholesome and refreshing drink during the labors and the heat of summer, may take an interest in trying a beverage, composed of the following, which we commend as wholesome and refreshing:

2 lbs. of the flour of wheat,
3 lbs. of malt reduced to flour,
3 lbs. of flour of buckwheat.

Pour fifty quarts of boiling water upon the mixture, and then add half a pound of the leaven of beer, or two pounds of the leaven of bread.

On the following day, stir the whole thoroughly, and add another fifty quarts of luke-warm water, when the fermentation is completed.

This drink is healthful and refreshing, but it will very soon turn sour.

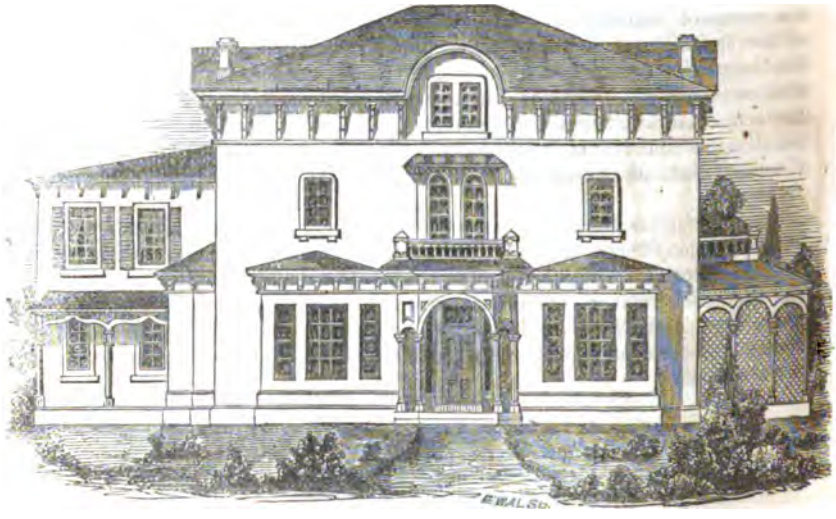
[We think the quantity of water stated here must be too great.—ED.]

D E N W O O D,

THE RESIDENCE OF JOHN J. SMITH, ESQ., GERMANTOWN, PA., NEAR PHILADELPHIA.

THE private residence of which we give a drawing, presents some peculiarities of construction and interior division, which we have thought might prove a useful study to those who are about to build.

It is a complete *rus in urbe;* the kitchen being *in* the village, and the opposite or piazza side, facing the northeast, for summer afternoon shade, overlooks the country, with a fine belt of trees within a suitable distance. The amount of ground attached is two acres, but we observed that it is filled with the most valuable hardy trees and shrubs, imported and domestic. Among the former will be found a collection of Hollies and Rhododendrons —two important but much neglected families of plants.



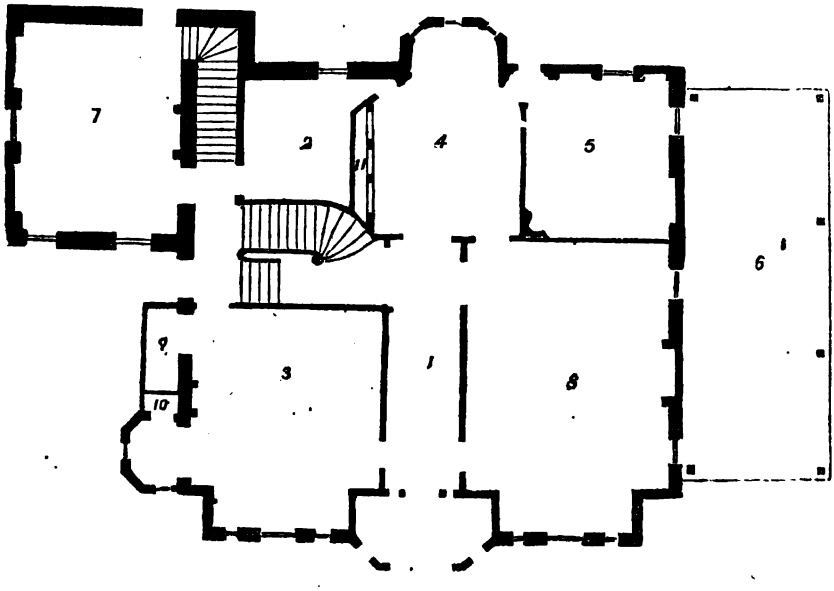
DENWOOD—FRONT ELEVATION.

The first thing that strikes the eye in looking at this house is the circular hoods in the attic story—a contrivance which gives height to a considerable portion of the rooms, and has externally a good effect. The attics are, in fact, as good rooms as need be asked—superior to any we have seen in dwellings of the same elevation. A front portico, and two projecting bay windows, make not only a cheerful entrance, but add materially to the size of the drawing and dining rooms. The portico, as well as the interior hall, are paved with tesselated tiles, made by Minton & Co., Stoke-upon-Trent, England, which are now becoming so much appreciated, and which can not be too much known.

The interior of the house is divided in a different manner from most dwellings, as will be seen by a glance at the ground plan. The hall is carried only to the depth of the drawing-room, where, by an ornamental ground

glass door, it opens upon a neat library having a bay window slightly enriched at the top with colored glass, so that the view through the library door, and the bay windows beyond, produces an effect like that of an oratory. The book-cases on one side are recessed out of the butler's pantry, so as to occupy no space from the room. The two doors in the octagon corners are filled with book-backs, bound on blocks to form a perfect representation, and to furnish the room—a plan much practiced in Europe. These doors open respectively into the butler's pantry and the private office beyond the drawing-room. Three good and useful rooms are thus obtained. The pantry is a low story; above it is the bath-room, etc., and above that a convenient chamber; making three stories in the part of the house nearest the kitchen. The dining-room, on the left of the hall, enlarged by the front projecting window, and a handsome bay window at the side, is large and convenient. Behind the fire-place are closets beyond the walls of the house, and entered respectively from the side bay window and the dining-room. They are of a comfortable temperature in the coldest weather, being behind the chimney. The staircase has been thrown out of sight in the passage from the hall to the kitchen, and, being uninclosed, has a light and airy appearance.

The whole house is tempered by a furnace, made to warm all the rooms if required, as well as the hall. In every way advantage has been taken of space, which is saved wherever it was possible. As examples, we noticed



PLAN OF PRINCIPAL FLOOR.

EXPLANATION.—1, Entrance Hall. 2, Butler's Pantry. 3, Dining-room. 4, Library. 5, Private Office. 6, Piazza. 7, Kitchen, with summer do. attached. 8, Drawing-room. 9, Pantry. 10, Closet.

that under the chamber windows drawers are let into the stone walls, for shoes, etc.; in the library is a concealed umbrella closet; and between the book-cases a long closet in the pilaster for drawings, or spy-glasses, etc. Both hydrant and rain water are plentifully supplied to the house and grounds,

in which are also two pumps, a gardener's lodge, convenient stables and coach-house, etc., etc.

The spot on which this house is erected was, two years ago, a stable-yard; The visitor will be struck with the transformation that has been already effected. When Mr. Smith's numerous fruit and ornamental trees have had a few years' more growth, we hope to visit it again, and have no doubt of being able to call it one of the handsomest and most convenient places in Pennsylvania, where, by the way, much good taste is growing apparent.

The house was designed by an English architect to combine all the comforts collected in a compass of 42 by 36 feet; the design was carried out and improved by Thomas U. Walter, Esq., the architect of Girard College, and now superintendent of the Capitol extension at Washington.—*Horticulturist.*

PRINCIPLES OF AGRICULTURE.

A PAPER was recently read before the Farmers' Club of New-York, by Dr. R. L. Waterbury, which seems to have conflicted with the views of Messrs. Mapes, Waring & Co., who undertook to answer it. On reading the report of their remarks, Dr. W. found it necessary to disclaim the views attributed to him, and, in doing so, gives the purport of the paper read by him as follows:

That, without the use of any foreign fertilizer, produce enough may be sold off from a farm, in most portions of the Union, to pay the expense of conducting it; and yet, by judicious management, the soil may be annually improving in condition;

That this can be effected easiest in those portions of the Union where the value of land is the least, and where, consequently, the farms are largest, and the longest rotations of crops can be profitably resorted to;

That no system of farming is deserving of our attention that does not recognize the necessity of farm exports;

That a State may, to some extent, export agricultural products, without diminishing in capability to produce them;

That an inspection of the census returns on the United States and of the State of New-York shows that the amount of crops of this State has increased for the last ten years much faster than the area of improved lands in the State, and that, consequently, the lands can not be "running out;"

That the processes of Nature, to which we owe the present alluvial condition of the surface of the earth, are still at work, and that land left entirely to itself will, by the action of water and vegetation improve in fertility;

That the process of tillage alone may be made to accelerate this improvement, and help to provide for the necessary waste of marketing;

That rain penetrates the porous parts of the earth's surface, and percolates through them until it comes to impervious strata, and that it runs along this impervious strata until it finds egress as springs, and that spring water is impregnated, more or less, with saline substances;

That the evaporation which is continually going on of the water from the surface of the earth, leaves the saline matter in the surface, as but a small part of the water that falls as rain ever reaches the sea;

That the mineral springs of Saratoga, and other localities, are exaggerated

illustrations of this process, and the more fertile condition of valleys is to be, in part, referred to the same cause;

That, in the present thinly populated condition of our Continent, the true purpose of American agriculture, at this time, is to wisely direct these natural forces, rather than apply pinches of guano, and tea-spoonfuls of superphosphates to individual plants, although such applications may pay on some farms, and probably do pay well on all *market gardening* operations.

The objection to soil analysis is this:

The difference between the early soil of Virginia and the same soil in its present condition has been made by the loss of 1,200 lbs. of alkalies to the acre. But this 1,200 lbs. forms not quite three ten-thousandths (000.27) of the soil to the depth of a foot.

The idea that any amount of variation, within such infinitesimal limits, can be measured and defined by *quantitative analysis* is absurd. Top-dressing of the same amount would, in the same way, fail of being detected.

That directions given by agricultural chemists have led to successful results is undoubtedly true; but these directions have been founded rather upon experience and observation than upon chemical analysis.

R. L. WATERBURY.—*Country Gentleman.*

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

LAWS OF HEALTH.

MESSRS. EDITORS:—One of the most common and yet one of the most important mistakes of which mankind are guilty, generally through ignorance, are in relation to the laws of general health. We live and violate these laws almost every day of our lives; and yet wonder why we do not feel as well as we might and ought to. The great wonder is that many of us have any health at all, considering the manner we live. It would seem that the most common ideas of comfort and health are understood, namely: the clothing for the body suitably for the season; the securing of dry feet, etc. Still many are greatly in fault even in these respects. But a more common fault is in the amount and kinds of food which are taken into the stomach. We are no advocates for cheap nor mean food, nor for a pure vegetable diet; yet we believe that a due proportion of light food at our meals is the best for all classes. It is a rule in our country, that those classes which love or use much bodily exercise, as farmers, mechanics, manufacturers, etc., must have meats or animal food three times a day, more or less. This plan of living we believe to be a great mistake, even for the working man, and much more so for the man of in-doors, or light labor and sedentary habits. A diet of one hearty meal (dinner) of animal food, with a breakfast of shad, or other fish, with a cup of coffee, and a dish of tea at night, with a slice of bread and butter and a cake, will give more comfort and good health to a man than a larger amount of flesh or hearty food. We do not mean to say that the hard laboring man, as the farmer or mechanic, can live on as light food, or on the same amount of food, as the in-door, or sedentary man. But what we mean to say is, that one-third less of animal food, and two-thirds more of light or vegetable food, would be much better for the hardest working man, both for comfort and general health. Of course the general rule is to stop

eating when you have enough. But if we were to stop while we have some appetite left, it would be better for us than to surfeit the stomach as we often do. Severe exercise or hard labor directly after eating a hearty, meat dinner is injurious. Children from infancy should be taught to eat as little food as may be, and still have them satisfied. Some mothers seem to go on the plan of "stuffing" their children to keep them quiet—a practice which will lead to gluttonous habits when they grow up. As to the amount of food necessary for a meal, a great deal depends on habit. In fact, we are creatures of habit in this respect, like others. Then, again, some constitutions may require more food than others. One great thing should be remembered, namely: system, and order, and regularity in meals—an essential point in securing good health. Another great point is a proper amount of exercise for the body. All out-door laboring men, with many in-door mechanics, get enough of this exercise for the body while about their daily business. On the other hand, many men, like merchants and other business men, in the town and city, do not get this exercise. The consequence is, or will be in a course of years, if inclined to flesh up, that, by and by, dropsy and gout will make their appearance. Such men should make it a point to walk several miles every day. Riding on horseback is good; but what is still better, would be hard labor in the garden, or on the farm, where all the muscles of the body could be brought into action. We do not stop, now, to say whether a morning walk, a mid-day or an evening jaunt, are preferable as to health. But what we claim is, that the denizens of the town and city should have exercise at some rate in the course of the twenty-four hours.

We know a man in a neighboring city who has made it a point for years to take a "morning walk" of a mile before breakfast, rain or shine, snow or mud, invariably every morning. He says that his constitution is invigorated and strengthened, and his appetite sharpened by the plan, of which we have no doubt. All constitutions might not stand this test, but his does at least. We learn that in the country, the early morning air, in a clear morning, is healthful and invigorating to the constitution—sleepy denizens of cities who call it poisonous—to the contrary, notwithstanding. A large amount of exercise or labor before breakfast might not be advisable; but a moderate degree of it is healthful and bracing to the system. Of course the city denizen had much rather take his "morning nap" than a "morning walk." And why? Because the city people have a universal habit of turning night into day, and day into night. We doubt much whether one-half of the adult population of our large cities ever see the bed-chamber before twelve o'clock at night, while a large portion of them, like the drunken dandy poet in Broadway, will hear the bell toll out full "seventeen o'clock," before they are abed. Is it any wonder, then, that they want their "morning nap" instead of a "morning walk" for health and comfort? The truth is, the body must have about so much rest in the way of sleep; if it can not have it in darkness it must have it by daylight. But does this make out a case that the "morning nap" is more healthful than the morning air? By no means. We learn that in the city, as customs are, it is almost impossible to retire to bed early, or even at a reasonable hour. Then, again, many kinds of business in the city require a good part of the night to carry them on, like the printing of the daily papers, etc. Thus, all conspire to turn night into day, and day into night. But, then, a reform is necessary to the masses in this respect of keeping late hours, and then "sleeping it out" by daylight. We do not know why a "morning walk" in the city can not be made as agreeable in the city as the country—saving the difference between the purity of

the air in the country and that of the city. Of course all having damps and fogs, in spring and fall especially, in the night, both in city and country, should be avoided and guarded against. So, too, the exhalations and miasmas arising from the decay of vegetable matter in and near swamps, peat, mud, etc., should be avoided. But, then, outside of these objections, a good, clear atmosphere is always healthful, invigorating, and bracing to the system, whether that be in the morning, at mid-day, or evening, If this be so, no person in health need fear of taking his out-door walk or exercise in any part of the day or evening. That class of the population which stand in most need of out-door exercise is, we think, the female portion of it, especially in the country and villages; for we believe it to be true, in general, that the female community of the city take more open, out-door exercise than they do in the country or village. Which of the two portions spend their time to the best advantage throughout the day we shall not attempt to decide. In times of prevailing epidemics, like the cholera, dysentery, etc., then the evening air should be avoided, and other exposures which might help to bring on disease. We are satisfied that more people die for the want of exercise in the open air than there are that die from inhaling morning air into the system; and that we should all get along much better if we studied the laws of health more and practiced after them. What the system wants is a systematic course of life—to live every day alike, as nearly as we can, when we are made certain that the system is a healthful one. We think that many diseases might be kept off the system by taking this course. Of course we do not mean that a person should go entirely on an empty stomach, as this would be unsafe. But to eat moderately of light food, in case of prevailing epidemics, or ill-health and severe colds, we believe is advisable. To force food down when there is no appetite for it is a poor plan. It is better to wait till the natural appetite comes of itself. The amount of sleep required in twenty-four hours for a healthful body of course will range according to constitutions; some require more than others. Seven hours of sleep are enough for many, while others claim that they want from nine to twelve hours sleep, and they practice accordingly. Still, we believe habit to be the great rule in this matter as a general thing. All children and young persons appear to want more sleep than adults or older people. Hence, as people grow older, they seem to require less sleep; and a disposition to wakefulness through certain parts of the night is very common. All know the effect which is produced on the mind by care and trouble, often creating fatal diseases. "Lunatics" get little or no sleep. Night and darkness appear to increase the power of their disease. It is has been said by those skilled on this subject, that no person would ever become insane who can secure their regular sleep. This shows how necessary regularity of habits is in order to preserve good health. Yours, &c., L. DURAND.

Derby, Conn., May 8, 1855.

VALUE OF LAND.—A statement has recently been made, and generally copied into the newspapers as extraordinary, that a piece of land has been sold in London at the rate of two million dollars an acre. There is land in Boston worth double that price. The owner of the lot at the corner of State and Exchange streets, occupied by Gilbert & Sons, refused eighty dollars per foot, which is at the rate of $3,484,800 an acre.—*Traveller.*

PROFITS OF FARMING.

In New-England, this is a very fruitful topic of discussion in farmers' clubs and debating societies. Facts are the best evidence on the subject, and of these, those matters of experiment undertaken with specific reference to the value of the crop, will generally be regarded as most worthy of attention, since such are likely to be conducted most carefully.

The Hampshire Co. Agricultural Society, in Western Massachusetts, presents the following as the results of sundry experiments:

R. Wales Smith says, that on his farm of eighty-five acres he tills about fifty acres in nine years; has twenty heads of cattle in winter; fattens and sells one-third of them in the spring. He sells his dairy products. His rotation is corn, oats, and grass. He says, "During the present year, I have cultivated six acres in corn and potatoes, and four acres in oats, and mowed twenty acres. The labor has been wholly performed by myself, except for sixteen days in the hay season, when I hired a man to assist me.

PRODUCTS.

30 tons of hay, at $12,50,	$375,00
5 acres of grass, sold at $11,50,	57,50
250 bushels of corn, at $1,	250,00
150 " of oats, at 62½ cents,	93,75
Pasturage of 13 horned cattle, 26 weeks, at 33½ cents,	112,66
25 bushels of potatoes, at 50 cents,	12,50
20 " of apples, at 50 cents,	10,00
527 pounds of cheese, at 10 cents,	52,70
250 pounds of butter, at 20 cents,	50,00
10 tons of corn fodder, at $5,	50,00
2 tons of oat straw, at $5,	10,00
250 loads of compost manure,	250,00
	$1324,11

EXPENDITURES.

My own labor, 225 days,	$225,00
Hired man, 16 days, in hay-time,	20,00
Grass-seed,	6,00
Seed-corn, 1 bushel,	1,00
Seed-oats, 10 bushels, at 62½ cents,	6,25
Seed-potatoes, 2 bushels, at 50 cents,	1,00
1000 pounds of plaster,	4,50
75 bushels of oyster-shell lime,	12,00
250 loads of compost manure,	250,00
Interest on 69 acres, tillage and mowing, at $50,	207,00
Taxes,	27,00
	$759,75
Net profit,	$564,36

Hadley, Oct. 4, 1854."

In a report on their wheat crop, Messrs. D. D. & J. Whittemore, Jr., say, "Our crop of wheat was raised in Sunderland on one acre and forty-one rods of ground. In 1851, the piece was sown with barley, and seeded with clover. About the 12th of September, we ploughed in the second crop of clover, and sowed two varieties of wheat, viz: bald and bearded white flint—one bushel of the first, and one and a half bushels of the last, and harrowed well. Early in the spring, we sowed three bushels of salt, two and a half bushels of plaster, and five barrels of slacked oyster-shell lime. Our wheat suffered from the severe winter, and from the drought in summer. We judged that forty per cent. was winter killed. We harvested in July, and for want of barn room, had it threshed immediately by hand; consequently we lost a large per cent. by its being left in the straw. The quantity thus lost was estimated at from three to five bushels. Of the bearded, we had nineteen bushels, and of the bald six bushels, or twenty-five bushels of wheat, perfectly free from rye and all foul seeds.

VALUE OF CROP.

25 bushels of wheat sold for	$62,50
Value of straw,	7,00
	$69,50

EXPENSES.

Ploughing, sowing, and harrowing,	$3,75
Seed-wheat,	3,37
Lime, plaster, salt,	5,35
Harvesting and threshing,	8,00
Interest on land,	5,00
	$25,47
Net profit,	$44,03

Sunderland, Nov. 8, 1854."

In a report on CORN, Austin L. Clark says, of an acre of pasture land, not ploughed within the memory of the oldest inhabitant, "In May, I ploughed it about six inches deep, turning in ten loads of barn-yard manure. I then harrowed in eight loads of compost manure. On the 26th of May, it was planted. Eight bushels of leached ashes were dropped in the hill. The corn was hoed twice. The hills were not raised, and were three feet apart each way. The soil was a clayey loam. On the 14th of September, the crop was harvested.

VALUE OF CROP.

75 bushels of corn, at $1,	$75,00
4895 pounds of fodder, at $6 per ton,	17,47
4½ bushels of soft corn,	1,12
	$90,59

EXPENSES.

18 loads manure,	$18,00
8 bushels leached ashes,	80
Ploughing, harrowing, and hauling manure,	6,00
Planting and seed,	1,25
Hoeing and ashing,	3,50
Cutting and stacking,	2,00
Carting and husking,	6,00
Interest on land,	5,00
	$42,55
Net gain,	$48,04

Sunderland, Oct. 25, 1854."

Mr. Chester Cowles reports his crops as follows, the quantity of land being three acres:

VALUE OF CROP.

180 bushels, at $100,	$180,00
8 baskets of soft corn,	2,00
Corn fodder, estimated	18,00
	$200,00

EXPENSES.

45 loads of manure,	$45,00
Manure and spreading,	17,00
Planting and seed,	4,00
Hoeing and cultivating,	23,00
Cutting and stacking,	7,00
Carting and husking,	15,00
Interest on land,	18,00
	$129,00
Net gain,	$71,00

Amherst, Nov. 14, 1854.

George Dickenson cultivated RYE on land of second quality. In the spring of 1853, it was ploughed from seven to eight inches deep. Twelve loads of manure were applied to ths acre and harrowed in. Corn was then planted and thoroughly cultivated. The corn was cut up, the second week in September, and yielded at harvest fifty bushels per acre. The ground was again ploughed from eight to ten inches deep, and sown with a bushel and a half of white rye, per acre, at seventy-five cents per bushel. The crop was harvested the 13th and 14th of July.

VALUE OF CROP.

65½ bushels of 56 pounds,	$76,63
3½ tons of straw,	19,50
	$96,13

EXPENSES.

Ploughing and sowing,	$3,00
3 bushels of rye,	2,25
Harvesting and housing,	5,00
Threshing and cleaning,	6,00
Interest and taxes,	15,00
	$31,25
Net profit,	$64,88

Hadley, November, 1854.

On two acres, Mr. Cowles estimates a crop of rye as follows:

VALUE OF CROP.

50 bushels, at $1,25,	$62,50
Straw, by estimate,	15,48
	$77,98

EXPENSES.

Seed,	$2,25
Ploughing, harrowing, and sowing,	3,50
Harvesting and threshing,	12,00
	$25,75
Net profit,	$52,23

Albert Montague, of Sunderland, makes the following estimate of an oat crop:

VALUE OF CROP.

60½ bushels of oats,	$30,25
1½ tons of straw,	9,00
	$39,25

EXPENSES.

Ploughing and sowing,	$2,00
Seed,	2,00
Harvesting and threshing,	4,50
Interest on land,	4,50
	$13,00
Net profit,	$26,25

Sunderland, Nov. 1, 1854.

SUSPENDERS.—The New-Haven Palladium says the manufacture of woven suspenders in the United States was commenced about the year 1840, at Middletown, Mass., with a capital of $40,000. There are at present six factories in the country, five of which are in the State of Connecticut, and one at East Hampton, Mass. The capital employed in the business is half a million of dollars.

THE IMPROVEMENT OF HONEY.

[Our Polish friend, alluded to upon another page of this number, has given us the following results of his own experience in this branch of industry; and it being written in French, as was the other, we have thus translated it into English.—Eds. P. L. & A.]

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

Mr. Editor:—The State of New-York produces honey which I have carefully examined. It is a fluid, of light weight, and the wax is yellow. To improve the quality of it, I make the following suggestions:

The honey of wild bees inhabiting the forest is dark colored, and its wax is yellow. The honey of bees feeding in orchards is clearer, and the wax is more yellow, but sometimes these cells are very white, and the honey which they contain is very white. In my country, Poland, I attended extensively to the production of honey; and I perceived that bees placed in my orchard gave me a crop of honey clearer, and the wax of it white. The honey which was separated from the wax by draining was found white, compact, and resembling sugar to such a degree as to be cut with a knife. The wax was very white. The following year, the honey was of an inferior quality, as well as the wax. The third year, the honey was improved.

I then made an investigation of the subject. I examined the habits of the bees, and came at length to the solution of the enigma which had occupied my attention for three years. In the vicinity of the apiary, I had a field in which I sowed buckwheat. While this was in flower, I perceived that the bees constantly frequented this field, and that they labored with remarkable diligence, and their product was very large. The honey of this year was improved in quality and in quantity.

The next year, I made an experiment. While the buckwheat was in flower, I removed their hives upon the borders of the field. I noted carefully the diligence of the bees. What was remarkable, and after the flowers disappeared, my curiosity led me to open the hives, and I was greatly astonished to find the comb full, and constructed of white wax, while the honey was also white. That which I separated from the comb by draining and a gentle heat, and placed in pots, formed a compact mass analogous to sugar, so much so, that it might be cut with a knife.

I left two hives without disturbing the honey; and at the approach of autumn, I again collected the product. The portions from which the honey had been removed after the flowering of the buckwheat, had been refilled with wax and honey, but of an inferior quality; those of the young republics from which the honey and comb had been removed, had been again filled; but the two hives which had remained untouched, had been deprived of their honey, and presented the aspect of empty and dry cells,

I was satisfied that the excessive abundance of honey had induced idleness in the bees, who fed upon their superfluity, and, refusing to labor, quietly consumed the product of their past toil.

Having this experience, after the season of the flowering of the buckwheat, I gathered my crop entirely, and at the commencement of the winter, I inspected my hives, removed the super-abundance, and if the season was not favorable, I supplied those hives which were not in good condition.

By this means, I learned that the flowers of buckwheat presented the best material for honey and for comb, which they supplied both in abundance

and of superior quality. Hence, I have since continued the practice above described; and I advise farmers who give any attention to this product, to give proper consideration to my experiments.

It should be added, that this gathering of the sweets of the flowers of the buckwheat does not at all diminish the quantity of grain, but, on the contrary, its effect is favorable, and even increases the amount of flour.

During my residence in France, in Sologne, a country situated on the banks of the Loire, in the departments of the Loire and Cher and T———, in Mayenne, and in Bretagne, I repeated the same experiments with the same success; and to-day, the French apothecaries make use of this same white honey, which, in common, is called the honey of Orleans, and which commands a price one-third higher than that of ordinary honey.

BREEDS OF CATTLE.

At a late discussion on cattle, at Albany, B. P. Johnson, Secretary of the New-York State Agricultural Society, is reported by the *Country Gentleman* to have said:

The West Highland is a small, black, shaggy animal, perfectly hardy, and runs out in the winter. The beef is of extra quality, superior to any other in the London market. A higher price per stone is paid for them than any other. In Norfolk they are the most prevalent, and are considered the most profitable breed of cattle. Mr. Colman speaks of them as of extra fine proportions, being a perfect parallelogram. A gentleman from Western Virginia who thought that State had the best cattle in the world, and that he should find nothing in England to equal them, went with him (Mr. Johnson) to Smithfield market, and when he saw the black cattle from Scotland, he exclaimed, in perfect astonishment, "I give it up. I have never seen any thing equal to this." They would be admirably adapted to Vermont, and other New-England States, and to the northern countries of our own State. A few have been imported into Canada. The Short-horns stand pre-eminent for early maturity, and great aptness to fatten, with a fine, mellow skin—which is absolutely necessary for fine fattening qualities. Will mature from six to nine months earlier than any other breed. Had known a herd of Short-horn grades, of the same age as a herd of native cattle, fed under the same circumstances, bring fifteen dollars a head more in the New-York market.

Herefords are a very superior breed, though not very extensively introduced here yet. Has visited England, and never saw finer cattle. *Feeders* uniformly told him they could make more on them than on Short-horns. Not so the *breeders*, however.

Devons, in quality of meat, are next to the West Highland. For beef, milk, and the yoke, they are, and always will be, a most popular breed. The celebrated red cattle of New-England have been thought to be Devons. They are more like the Sussex, a little larger and coarser breed than the North Devon. They are a very valuable breed for milk, working-oxen, etc., and there is no breed of cattle better for crossing with the Short-horn. It is to these breeds we must look for improvement. Breeders must aim at developing the parts of cattle which command the highest price.

HOW TO JUDGE A HORSE.

A CORRESPONDENT of the *Prairie Farmer*, contrary to old maxims, undertakes to judge the character of a horse by outward appearance, and offers the following suggestions as the result of close observation and long experience:

If the color be light sorrel or chestnut, his feet, legs, and face white, these are marks of kindness.

If he is broad and full between the eyes, he may be depended on as a horse of good sense, and capable of being trained to almost any thing.

As respects such horses, the more kindly you treat them, the better you will be treated in return. Nor will a horse of this description stand the whip if well fed.

If you want a safe horse, avoid one that is dish-faced; he may be so far gentle as not to scare, but he will have too much go-ahead in him to be safe for every body.

If you want a fool, but a horse of great bottom, get a deep bay, with not a white hair about him; if his face is a little dished, so much the worse. Let no man ride such a horse who is not an adept in riding—they are tricky and unsafe.

If you want one that will never give out, never buy a large, overgrown one. A black horse can not stand heat, nor a white one the cold.

If you want a gentle horse, get one with more or less white about him, the more the better. Many suppose that the parti-colored horses belonging to circuses, shows, etc., are selected for their oddity, but the selections thus made are on account of great docility and gentleness.

CORN STATISTICS IN FRANCE.

[IN our February number, we published a short extract from *Le Siecle*, with this title. We have since received a reply from a Polish gentleman, now residing in this city, written in the French language, which we have translated, and here present to our readers.—EDS. P. L. & A.]

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

MR. EDITOR:—In your journal, "The Plough, the Loom, and the Anvil," for February, 1855, page 482, you give the Corn Statistics of France from *Le Siecle*. That those statistics are erroneous, you will be convinced after having examined those deposited in the archives of the French Minister of Commerce and of Agriculture for the preceding twenty years. [See the table.] This table shows that, during these twenty years, agriculture has made great progress. The crop of wheat has more than doubled; that of rye has nearly doubled; mixed grain has increased fifty per cent., and barley still more. Millet and maize remain nearly the same, as also the buckwheat, except that in certain years it has increased, not from a more extensive cultivation, but because the season was peculiarly favorable to its growth.

Since the year 1835, agriculture has made great progress in France. Much

heath land has been made productive with the aid of manure, lime, dead animals, and poudrette—the animal manures being made more effective by mixture with blood, and the flesh of horses no longer fit for service.

It is computed that France, since 1835, has increased her crops by one-third, except the millet, and maize, and the buckwheat, which have remained without much variation.

When *Le Siecle* supposes that the crop of rice, harvested in France, amounts to $26,000,000 hectolitres, it is in error. The whole of this crop is consumed in France; but it is not a common article of food, except in the cafés and the restaurants, where rice is eaten with milk and with fat, (gros., In private houses it is used sparingly, as in soup, with onions, with cabbage, and with crumbs of bread. This rice is grown in France, and is imported from the colonies, from Italy, and from the Carolinas. One-fourth of the buckwheat is fed to animals; the last is sowed with millet and maize; and the consumption of these two products is rare in France, except in the country, and it is only in the season of harvest that it is served to laborers. The population of France, which is about 35,000,000, is fed chiefly with white bread and mixed bread, the last being composed of the flour of mixed grain, or of rye mixed with wheat of the worst quality.

Bread of pure rye is found only in Paris, and in some of the large cities. It is a fancy bread, dearer than that taxed by the police, though exempt from any tax. The Frenchman every where uses bread, and at least he requires, when he labors, three pounds of bread in his soup, with his wine, or with his meat; but to eat alone a pound of bread suffices. An ounce of flesh or of lard is required for a meal, and a very little bread with cheese, but a very small quantity suffices with apples, and other fruits, grapes, and also with potatoes. This last named article, potatoes, is consumed in great quantities, they being pared, fried, and salted. Bread is an essential, while the potato is a luxury to the French.

NUMBER OF HECTOLITRES OF CERTAIN CROPS GROWN IN FRANCE.

NOMBRES D' HECTOLITRES

recoltés sur la totalité des terres ensemendes, en

Années.	Wheat.	Mixed Grain. (Wheat & Barley.)	Barley.	Oats.	Maize & Millet.	Buckwheat.
1815	39,460,791	6,732,132	19,678,595	12,999,751	5,630,960	5.314.542
1816	43,316,694	9,303,887	20,943,556	13,810,347	4,153,310	3.638,984
1817	47,984.044	9,731,194	22.422,870	16,508,998	6,850,338	6,499,778
1818	52,697,927	10,438,583	24,734,120	13,186,458	6,101,562	3,363,098
1819	59,841,150	12,405,588	30,904,225	16,634,424	9,123,813	6,646,330
1820	44,847,720	9,228,580	25,400,471	12.379,167	5,786 988	7,745,108
1821	58 219,268	11,394,360	30,284.961	17,710,319	5,047.168	7,987,309
1822	50,856,707	10,168,887	27,059,535	14,085,328	6 044,119	8.371.676
1823	58,676,862	11,075,194	29 913,341	17,509,319	6,657,510	6,544,211
1824	61,788,972	11,271,909	29.923,148	17,010,859	5,906,815	7,361.861
1825	61,035,177	11,851,398	26,722,151	14,485,070	6,519,046	6.126,734
1826	59 631,917	11,111,492	29,834,465	15,293,582	7,140.888	7.408,492
1827	56,785,944	11,226,696	27,565,262	15,721,223	5,047,391	6,979.888
1828	58,823,512	10,936,592	29.935,521	16,126 902	6,278,525	9,839,216
1829	64,285,521	11,680.386	32.652,568	15,695,755	6.590,604	7.949,859
1830	52,782,008	9,917,241	26,876,157	19,901,716	7,330,701	7.46-,080
1831	56,429,694	10,821,675	27,546,618	18,119,023	7,490,343	10 205,848
1832	80,089,016	13,697,190	37,996,755	18,517,252	4,036.637	6,151,292
1833	66,073,141	11,435,433	34,291,532	15,907,119	7.239.083	5.922,084
1834	61.981,226	11,289,972	29.41[illegible],982	17.474,857	8,412,945	10,166,666
1835	71,697,484	12,281,020	32,996,950	18,184,316	6,951,179	5,175,923

WHAT FOOD WILL PRODUCE THE MOST WOOL.

Peas, beans, vetches, etc., are useful for the purpose of enriching the blood, by furnishing it with large supplies of albumen, which is its principal constituent. It will be remembered that in the analysis of flesh and blood the relative proportions of their constituents are nearly identical; consequently, whatever food contains nitrogen, and the greatest amount of albumen, is best adapted to the development of flesh or muscle, and is therefore the most nutritious. Wheat, rye, barley, and buckwheat, contain large quantities of albumen, especially the first two; while oats, it will have been seen, contains ten and a half per cent. of its organic elements of albumen, and *peas and beans no less than twenty-nine per cent.* What conclusion, then, is to be drawn from this? The chemical composition of horns, hoofs, hair, *wool*, and even feathers, is substantially the same; their organic elements are coagulated albumen and gelatin, and their inorganic, silica, carbonate, and phosphate of lime, and the oxides of iron and manganese. Hence it will readily appear that food given to the sheep which will supply the greatest proportion of albumen, in the same ratio will increase the wool secretions, and, consequently, be productive of the most wool, *provided, however, they also hold in suitable combination the inorganic substances of wool*, without which they assimilate mostly for the formation of flesh or fat. This may be exemplified thus: a soil may be highly productive of corn, as well as a few of the cereal grains, yet for the production of wheat it may lack the proper proportion of the phosphate and carbonate of lime, and, consequently, the berry will not only be deficient in quantity but quality.

The following table exhibits the results of the experiments of the distinguished agriculturist, De Raumer, on the effects produced by an equal quantity of several substances in increasing the flesh, tallow, and wool of sheep:

	Increase weight of living animal. lbs.	Produced wool. lbs.	Produced tallow. lbs.
1,000 lbs. potatoes, raw, with salt,	46½	6½	12½
do. " do. without salt,	44	6½	11½
do. " mangel wurtzel, raw,	38½	5¼	6½
do. " wheat,	155	14	59½
do. " oats,	146	10	42½
do. " barley,	136	11½	60
do. " peas,	134	14½	41
do. " rye, with salt,	133	14	35
do. " rye, without salt,	90	12½	43
do. " meal, wet,	129	13½	17½
do. " buckwheat,	120	10	33

These results are said to agree with those of De Dombale, and with those of a number of other agriculturists.

It will be perceived by the above table that *wheat* produces the greatest increase in the flesh of the sheep, though but little greater than *oats*; that *peas*, *wheat*, and *rye*, produce the greatest increase of wool; and that *barley* and *wheat* cause the greatest increase of tallow. That, as an average, grain generally gives about three times the increase in the flesh, that roots do when in equal weight; that grain produces about twice as much wool as is caused by equal weight of roots, and several times the amount of tallow.

The legitimate conclusion from the foregoing is, that the flock-master, whose object is wool only, must rely on good hay and some straw, whose constituents are admirably adapted for the growth and perfection of wool, with a moderate allowance, daily, of ground peas and oats, and some potatoes as green food, for the greatest amount of wool; and those gross substances, oil-cake, corn-meal, ruta bagas, may be turned over to the producers of fat mutton. This will presently be adverted to again.—*Morrell's Shepherd.*

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

OF LINEN.

MR. EDITOR:—I have heard much said of a want of linen in the United States, and of its high price, and of the want of success in the cultivation of this plant in this part of the world. The soil for the cultivation of flax is no where better than in Vermont. It is good, also, in New-York, in Pennsylvania, in Delaware, and in Maryland. But has any one examined the causes of the failure of this crop, and the necessities for this particular growth? Of this, I have doubts.

For this reason, permit me to present the following for your consideration. The universal complaint is that flax does not succeed, and all the fault is laid to the charge of our mother who feeds us, the earth, which, in this country, is unfavorable to its cultivation.

We believe the causes which prevent the success of this particular branch of cultivation to be—1. The want of good seed; 2. The bad selection of soils; 3. The bad manipulation of the fibre.

The seed, which comes from Riga, (Russia,) can not meet the expectations of the farmer. And why? The supplies of the large magazines of Riga are furnished either by the extensive proprietors of the soil, or by the trade of Jews who buy in small quantities, and resell to the merchants of Riga. Those who are engaged in this traffic are mostly Jews.

The proprietors, persuaded of the good quality of their merchandise, hold it firm, and sell at a very high rate, while the merchant holds on to his own price, believing he has a good article. The Jews buy the flaxseed of the same proprietors, with little regard to their quality, but are content, since they can buy and sell at a good profit to the merchants at Riga, who can thus supply the wants of commerce at a small profit.

But perhaps you will reply, but the grain is as good and as heavy as any other, so that agents, ignorant of any thing better, are induced to buy. But not knowing the fraud, they deceive themselves, and, in their turn, they deceive others. In appearance, there is no difference in the quality. Thus, the Jews who carry on the small commerce in flaxseed, buy it of bad quality and small size, boil it, and give to it a lustre the appearance of that of the best quality. Thus improved in its appearance, they offer it in the market. Being purchased for the sake of the seed, it will not reproduce enough to make painters' oil. It disappoints the manufacturer; and the cause of its deterioration is imputed to the effects of the sea. But it is true, that as the boiled egg will not produce a chicken, so boiled flaxseed will not produce a stalk. This flaxseed is known in North America under the name of Swedish.

Poland produces much flax, but of an inferior quality, on account of the use of seed grown in Lithaine being mixed with good seed, which attracts

the aqueous particles from it, renders it more slender, (maigne,) and the stalk smaller and weaker, and less fibrous. But some agriculturists in this country, and among others the undersigned, were persuaded of the inferior quality of Polish flax when compared with that of Lypse, in the northern part of Hungary, which is long, white, and strong.

After having learned the method of manipulation of the fibres, in those places, I procured seed from that country—to wit, from Knieson, a city situated in the county of Lypse. I sowed it, and obtained flax white and a yard in length; and we had grain which produced more than twice the quantity of oil produced from Swedish flax; and so great an improvement was made in this branch of industry, that we even rivalled the flax of Austria.

The American Consul, at Trieste might procure flaxseed at Knieson, or Lubownia. The families from which it might be obtained, without fear of fraud, are those of Kawecki, Kigzyk, Ongorko.

This is the counsel we would give to the farmers of this country—that they should procure seed of this plant that will not disappoint their expectations. They may thus do a good service not only to themselves, but to the country, and rid themselves of the payment of a large duty on flax to which they are now subject.

During my sojourn of twenty years in France, in the department of Mayenne, I discovered that the crop of flax was mean and of bad quality. I made known my opinions to M. Desjardin, councillor of the department, and he followed my advice, and procured seed from Lypse, abandoning the use of Swedish flaxseed, and the improvement was decisive. If the vines of Tokay can be imported into New-York, it seems to me that there can be no difficulty in importing the flaxseed.

A single word upon its cultivation. The spot for this growth should be selected upon the southern border of a stream. A black soil, without manure, is the most favorable to its growth—such as is suited to the growth of clover. In places remote from a stream, the land selected should be moist and well cultivated.

After the flax is gathered, the stalks should be dried; and after the seed is separated, they should be exposed for a fortnight to the dews, or they may be plunged in water for three days or more, and then dried, according to circumstances, either by the sun or in heated ovens. After this, the usual manipulation follows.

SANIEWSKI FELIX.

[The above was sent us in French, and we have translated it into English. The subject is of great importance, and these suggestions may prove to be eminently worthy of practical regard.—EDS. P. L. & A.]

A NEW COTTON GIN.—S. R. Parkhurst, of this city, has succeeded in perfecting, to his entire satisfaction, we believe, the American cylinder cotton gin.

The steel cylinder cotton gin as now made by Mr. P. only needs to be oiled, and the hopper filled, and the cotton kept back in the lint room. The feeding apparatus adapts itself to the motion of the machine, and will supply the cotton as fast as wanted from the hopper. Cotton ginned by this machine shows a much better staple than if done by the old machine, and is said to be worth about one cent in the pound more than if ginned by the saw-gin, while it does its work much faster, and with less labor.

PEAS AND SWEET POTATOES FOR FATTENING HOGS.

Mr. Nathan Winslow, of Perquimons county, fattens his hogs for slaughter and sale, as well as for his own consumption, almost entirely on peas and sweet potatoes. From the 1st to the 15th of September, the hogs are turned on a pea-field. At the same time, a small portion of the sweet potato ground is fenced off. The wood-land is close at hand, and the hogs are turned therein every day. This is done because he deems it better for the health of the hogs. Every night, alternately, the hogs are turned into the pea-field and the potatoes—new portions of the latter being brought in as the first enclosed are exhausted. Thus kept on peas and potatoes alone, (for he supposes they get very little from the woods,) the hogs become very fat. For change of food, and late in the fattening, swill is added to the food, made of turnips, boiled with a little corn-meal, and seasoned with salt. Mr. Winslow is confident that all the corn consumed during the whole time of fattening does not exceed the average of a peck for each hog; therefore, the fattening is due, in a very slight degree, to corn, and almost entirely to the peas and potatoes. Peas alone will fatten very considerably, but not enough to make good pork. But with potatoes, the hogs are not only made very fat, but their fat is even more firm and white than of hogs fattened on corn. After cold weather requires that potatoes should be dug, they are boiled before being fed to the hogs. Mr. Winslow is a very large and successful raiser of hogs, and seller of pork. I learn from others that his pork, fattened as above stated, is deemed the best in the markets.—*Southern Planter.*

GUANO FOR SUGAR-CANE.

We recently met with Col. John S. Preston, of Columbia, South Carolina, returning from his sugar plantation on the Mississippi River. In speaking of guano as a fertilizer, Col. Preston informs us that it was a very profitable fertilizer for sugar-cane. He used it first in 1853 on a field of fifty acres; the land was much worn. He took twenty-four acres of the field for the experiment, upon which he applied the guano, by putting on 200 pounds per acre; on the balance of the field, the same quality of land, he applied no guano, cultivating each portion in the same manner. The guanoed portion produced 900 pounds of sugar more per acre than the other, which, at 4½ cents per pound for the sugar, gave an actual money profit of $40 per acre, for the five dollars' worth of guano used. The next year, 1854, the field was still cultivated in cane from ratoons. It was remarked by every one who saw it, that the guanoed portion (24 acres) was the finest ratooned cane in the country. The result of the crop, the second year, from the guanoed portion, was greatly superior to the other—the difference more than sufficient to pay for the guano used.

Last year, Col. Preston used, 50 tons on 500 acres of cane; the result, though not so great, from the extreme dryness of the season, was entirely satisfactory, increasing the crop on the 500 acres to the extent of upwards of 400 pounds of sugar per acre; and he confidently expects the increase on the crop of ratooned cane this year, from the same 500 acres, to pay back the $2,500, the cost of the guano, with interest. He is using the same quan-

tity, 50 tons, this year. Col. Preston remarked this fact, in connection with the use of guano as a fertilizer in the cultivation of the sugar-cane, that it produced the finest effect upon their most exhausted lands. Col. Preston has promised us, for the columns of the "Cotton Planter," the particulars of these interesting experiments, which we hope to be able to lay before our readers some time this spring.—*American Cotton Planter.*

PRACTICAL AGRICULTURE.

Give us special directions—more practical directions; give us regular rules for the production of the various crops, so that we can raise our annual products by them, as a carpenter builds a house by his plan. Such, we suppose, is what many people expect of a "first class" agricultural paper; and just so far as any file of weeklies or of monthlies comes short of this, just so far short it comes of its obligations. Are we right in thus describing at least the secret hopes of many readers of those useful journals, if not their actual expectations?

If so, we are perfectly willing, for one, at once and for all, directly and explicitly, to extinguish those hopes, and annihilate those expectations, so far as the expression of our views, and opinions, or expectations, may produce such a result; for we have no sort of confidence in any such plan of operations, and the louder any co-laborer should proclaim this as his definite object and expectation, just so far our own conviction of his unfitness for his place would be increased, and we should look upon him in the same degree as a charlatan. We are well aware that some of our ablest journals have now and then been so unwise as to give countenance to this notion. They have permitted themselves to go quite too far in holding up the idea that scientific farming might be reduced to such plain and practical rules, that an ignoramus might refer to them to learn what to do next, just as he would to the calendar pages of his almanac to know the day of the month. One who talks on quite a high key about this noble science, has more than once intimated that when we have advanced a little further with our model farms, we shall know just how much corn it takes to make a pound of pork; and others may have erred (and ourself among the rest,) in not being sufficiently guarded on this vital point.

But why can we not reduce practical agriculture to a few simple rules, by which all farmers can be guided, and thereby become rich? One good and sufficient reason is, that the circumstances of the case, the condition of the land, the elements of which it is composed, or which may be wanting, the comparative value of the same crop at different places, or of different crops, and of manures, operating differently on different soils, or in different seasons, and the indefinite cost of fitting the soil for one or another kind of growth—all these and other particulars are so various, so changing, and so wholly unknown to the conductor of a journal, that specific instructions, requiring no skill, no science in their application, are nothing less than an absolute impossibility. Indeed, it requires but little less skill to apply than to construct the laws of agriculture, though the kind of knowledge required for the different positions of teachers and of learners may be somewhat diverse. For example. The teacher may contrive sundry important experiments, in reference to the cultivation of a given crop, and to do this wisely requires a previous fitness in the experimenter. But when all this is completed, it requires a knowledge of

soils in the farmer who would successfully apply the principles taught by those experiments.

Another may carefully test the fattening qualities of certain kinds of feed, in relation to his own animals. But it is not certain that other animals, long accustomed to a different diet, or those of a different organization, would uniformly exhibit exactly the same phenomena under the same treatment. Again, where land commands a large price, certain kinds of cultivation will be profitable, when they would be ruinous if applied on any low priced lands. Where land can almost be had for clearing it, "high farming" is not the most productive, nor would the rules of scientific management, as generally understood, be properly applicable. Extreme cases generally form exceptions.

Having thus shown our meaning, we have only to answer affirmatively the question, what is the teacher of agricultural science to do? And we answer, he is chiefly to do with general principles, and general rules of practice, in the application of which there is an absolute necessity of practical skill on the part of the learner. No book, and no collection of books, can be a substitute for this practical skill. They will furnish valuable aid; they will direct the attention into the right direction, and show where to look for the cause of given failures, but they can not become oracles, and he who makes them such will find himself, not unfrequently, as far astray as if he had followed an *ignis fatuus*. The book may be right; the application of it may be wrong.

Hence it is that we deal so much in principles, and so little in practical details, in regard to specific modes and processes. If we can give to our readers a proper conviction of their own wants, and of the principles by which they must be governed in their practical operations; if we can induce them to be in earnest in becoming good farmers, we shall do a great work. To do any thing else, with many, is utterly useless. If there is one who exhibits a practical contempt for the fundamental principles of the science of manures, for example, how foolish it is to discuss, *for his sake*, the comparative advantages of drills and sowing broadcast; of guano and poudrette, etc., etc. He will heed none of your advice; but call you a fool, and a mere book-farmer, if you advise any thing contrary to his own past practices.

There are those who will be benefited by any one solitary fact in the experience of a farmer. Being systematic in their views and their thoughts, they know at once what to do with every statement of fact, properly authenticated, which is brought to their attention, and they work it into their system just as orderly and skillfully as a seamstress uses up the parts of a garment, or the thread with which she unites those parts. These details are all useful to them, and chiefly to them alone.

Probably an opinion the reverse of this would be given, at first thought, by many. They would say the mere statement of fact is within the comprehension of the ignorant, while the scientific man alone can comprehend principles and theories. But, after reflection, we are sure that all will agree with us. Who appreciates the fact that a given medicine produced certain symptoms, in a given case, but he who understands both the medicine and the disease. To receive the fact as true, merely, without reference to the lesson it teaches, is useful to no one. Such a reception of truth is unworthy the name of knowledge.

But any child can understand a plain description of the various chemical attractions and combinations, and, in the light of such instruction, can see as at a glance, the bearing of any given fact; and they can take an interest in such teachings, and will grow wiser under such instructors.

HORTICULTURAL.

"I have laid great stress upon possessing a heap of compost, ready to apply to roots and shrubs every spring and autumn. Wherever the soil is good, the flowers will bloom handsomely; and no lady will be disappointed of that pleasure, if a compost heap forms one essential, in a hidden corner of the flower-garden. If you raise your perennials from seed, sow it when the ground has become thoroughly warmed, in a bed of light earth, in the open ground. Let the bed be in a genial, warm situation, and divide it into small compartments; a compartment for each sort of seed.

Sow the seed thin, and rake or break the earth over them finely. Let the larger seed be sown half an inch deep, and the smaller seed a quarter of an inch. Water the beds in dry weather often, with a watering-pot, not a jug. The rose of the watering-pot distributes the water equally among the seedlings; whereas, water dashed upon them from a jug falls in masses, and forms holes in the light earth, besides prostrating the delicate seedling.

About the end of May, the seedlings will be fit to remove into another nursery-bed, to gain strength till October; or be planted at once where they are to remain. Put the plants six inches apart, and water them moderately to settle the earth about their roots.

But it is rarely required to sow seed for perennial plants, they multiply so vigorously and quickly of themselves by offsets, and cuttings may be made of the flower-stalks in May and June in profusion.

The double scarlet lychnis, and those plants which rise with firm flower-stems, make excellent cuttings, and grow freely when planted in moist weather. Double rockets, lychnidea, and many others, succeed well.

Carnation and pink seedlings must be taken great care of. They will be ready to plant out about the middle of June; and as innumerable varieties spring from sowing seed, they should be planted carefully in a bed by themselves six inches asunder, and they will flower the following year, when you can choose the colors you most approve. Carnations properly rank under the head of biennials; but pinks are strictly perennial plants, and much has been written upon this hardy and beautiful flower. It comes originally from a temperate climate, therefore the pink loves shade; the fervid sunbeams cause its flowers to languish and droop. You may give them an eastern aspect.

Be careful to watch pinks when they are budding, and do not allow two buds to grow side by side. Pinch off the smaller bud, which would only weaken its companion. Keep the plants free from decayed leaves, and gently stir the earth round them occasionally with your small trowel. This operation refreshes them. Stake them neatly, that they may not fall prostrate after rain.

If you wish to preserve any particular pink, let it grow in a pot, or upon a raised platform, that it may be placed beyond the reach of hares, rabbits, or poultry, and be more easily sheltered from long and severe frosts or rains in winter, and from the dry heats in summer, either of which destroys the beauty of the flower. The pots can be sunk in the ground in fine weather. Do not hide your pinks among larger flowers; let them be distinctly seen. If you water pinks too much, their roots become rotten; and if you suffer them to be too dry, they become diseased. Beware of extremes. The best rule is to keep them just moist. A fine pink should not have sharp-pointed flower-leaves; they should be round and even at their edges, and the colors

should be well-defined, not running one into the other. The flower should be large; it should possess a great many leaves, and form a sort of dome. Piping and slipping is the most expeditious mode of propagating plants from any selected pink.

Pansies, violets, etc., are very easily propagated by parting the roots when the flowers are past. Pansies are very beautiful flowers, and cuttings of their young shoots will grow very freely if kept moist and shaded for some little time. By refreshing the soil every year, you insure large flowers. Pansies and violets bloom early in the spring.

Hepaticas must be parted like violets. They appear so very early in the year that no garden should exist without these gay and modest flowers. The leaves appear after the flower has passed away.

The polyanthus blooms among the early tribe. In planting this flower, be careful to insert the roots deep in the soil, so that the leaves may rest upon it, for the roots are produced high upon the stem, and those roots must be enabled to shoot into the soil. The polyanthus, like almost every other flower, loves a good soil with a mixture of sand.

In dividing these fibrous-rooted, perennial plants, take only the strong offsets, with plenty of fibres attached to them.

Polyanthuses, auriculas, double daisies, double camomile, London pride, violets, hepaticas, thrift, primroses, gentianella, etc., succeed well, taken up and divided in September, for they will all have done flowering by that time. Indeed, all perennial, fibrous-rooted plants may be taken up in October to have their roots parted, and the soil refreshed round them.

Peonies, and all knob-rooted plants, should be taken up in October to part their roots, and transplant them to their intended positions.

The saxifrage has very small roots, which are apt to be lost in borders if not carefully looked after. Like the anemone, etc., sift the earth well for them.

Dahlias require a word or two upon their culture. They love sand, therefore allow them plenty of it, but do not put manure to their roots, which throws them into luxuriant leaf and stem, to the deterioration of the flower. Peat mold is good, if you can obtain it, to mix with the sand, as it assists the flower in developing stripes and spots. Train each plant upright, upon one stem only, and give it a strong stake to support its weight, which soon succumbs under gusts of wind. Plant them in open and airy places. When the stems become black, take them up, separate the roots, and plunge them into a box of ashes, barley chaff, or sand, to protect them through the winter. Plant them out in May."—*Ladies' Flower Gardener.*

Plum Trees.—Plant your plum trees near water, and inclining so as to hang over the water, so that you can gather the plums in a boat. I have a hundred of them growing on my farm in that way, around an artificial lake, and not a plum has dropped from them. The curculio has here and there made its segment of a circle on the skin, and then thought better of it, for it left no egg in the incision, observing, no doubt, that when the plum fell it would be into the water, and so drown the progeny. Our plums generally did well on all soils south of the Highlands twenty years ago.

JAPAN CEDAR.

[CRYPTOMERIA JAPONICA.]

Among the numerous trees and plants introduced into England by Mr. Fortune, the Collector of the London Horticultural Society in China, no one, perhaps, has attracted so much attention as the Japan Cedar. It is nearly allied to the Cyprus, and grows to the height of 100 feet in its native habitation in China and Japan, being a great favorite for avenues, and valuable for timber. Whenever forest-culture shall command the attention which it deserves in this country, this "Queen of Evergreen Trees," as it has been called by high authority, is likely to be extensively cultivated on account of the durability and firmness of its wood, and the fact that the tree has a free growth, as well as a graceful form. It is employed in China for the high poles, which are every where placed at the dwellings of mandarins to denote their rank, where it is said to last for ages.

JAPAN CEDAR.

Only a few trees of the *Cryptomeria Japonica* have as yet been imported into the United States; nor are they likely to be abundant before they have attained sufficient age to yield a plenty of seeds. The first seeds received in England from Mr. Fortune arrived in 1844.

Mr. Barry thus commends it: "While in England, we were delighted with this tree wherever we saw it, in the open ground or in the house. We think

it unquestionably the most graceful and elegant evergreen tree of the immense number cultivated in Europe. It has proved perfectly hardy in England, and its growth is exceedingly rapid, equalling the Norway Spruce. We saw an elegant specimen in the Chiswick garden, nine feet high, that had made four feet growth last season."

A sandy loam, mixed with some peat or leaf mold, is the kind of soil best adapted to the Japan Cedar. Care should be had not to permit a wet subsoil to damage the roots by stagnant water. Smith, in his *Landscape Gardening*, published in Edinburgh in 1852, says that it was "still doubtful whether the Japan Cedar will become more than a bush in this country," meaning Great Britain. The climate of our Central and Southern States is much nearer that of China, and more likely to suit the *Cryptomeria* than that of either England or Scotland.—*Genesee Farmer.*

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

PEACH-TREES—MR. CHAMPION.

MESSRS. EDITORS:—Your Washington correspondent, Mr. Champion, thinks that our peach-trees were not killed during the cold weather of last winter, but attributes their destruction to the frosts of the last fall, or to a similar cause. The sap did not "*set*" right, he thinks. With due respect to Mr. C., I dissent from his views on the subject. He says when the sap is in circulation, (and it may be seen in a frozen state in beech and maple trees, in winter, when wood-choppers are cutting down timber,) the tree can not be killed. Now, Mr. Champion must know that the sap of trees does not flow in the center of the trunk, but within the *liber*, or inner-bark, where the *alburnum* is deposited. There always is moisture in the inside of trees, but no real circulation of sap, as I apprehend.

Again, the peach-tree is really not a northern plant, but seems, indeed, to flourish best in a moderately warm country; like Jersey for instance. It does not seem to be organized to withstand the severity of our climate at all times, particularly when the thermometer indicates 25° or 30° below zero, as it did last winter. Trees which I have, (Onondaga county, N. Y., in the central part of the State,) that were buried up in the snow, are not dead, but will live and do well. A bud which I saw on one of them was actually green, and would have doubtless produced a young peach had I not removed it. Here is proof conclusive that it was the intense cold weather of last December or January that killed the trees, and not the "sudden frost" in the fall, of which Mr. Champion speaks. By reading St. John's geology, you will find that there is an order of plants in the northern latitudes constituted so as to exist in cold weather; and immediately on the mercury rising above the freezing point, indicating a warmer temperature, the plants wither and die! Why is this? Palpably because they are organized to live in cold countries, in Iceland and Nova Zembla; while it seems that peach-trees are created with organizations suited to southern parallels of latitude. We do not raise many peaches south of the 43d degree of latitude. In New-Jersey, this season, peach-trees are represented to be doing well, with a fair prospect of an abundant crop. Then, the frost in the fall did not kill the trees. Why

not, Mr. Champion? An explanation from you upon this point would be acceptably received.

The whole truth of the matter seems to be this: It was so intensely cold last winter, in many parts, that peach-trees could not live; they had to yield to the severity of the winter frost, and not to the "fall frost." Many pear-trees are dead, and also fruit-trees of other varieties.

We had a tree on our farm which bore peaches for more than forty years, and then died of old age. The tree stood on a sandy knoll, where it was exposed to sweeping winds and cold weather. We have no difficulty in making trees live and bear fruit here for ten or even twenty years, except the cold weather. The curl-leaf we can get along with, and other similar diseases, but the cold weather is too much for us, in consequence of which we shall lose many thousand dollars' worth of trees in this section.

Very respectfully, W. TAPPAN.

Baldwinsville, N. Y., May 10, 1855.

CULTURE OF THE GRAPE.

All well-prepared vineyards are first trenched to the depth of two feet, at a cost varying from sixty to one hundred dollars per acre. All the lower loose stone is thrown out during the operation of trenching, and is used for constructing the walls for supporting the terraces into which the hill side is necessarily thrown in order to facilitate cultivation, and prevent washing or sliding in consequence of heavy rains. The ground is then laid off into rows for planting—the rows six feet apart, and the vines three feet apart in the rows. There are some variations from this, however, but these distances are those usually adopted. It gives two thousand four hundred and twenty plants to the acre. It is considered the best policy to plant cuttings at once in the vineyard where they are to remain, instead of roots; as the great difference in cost is not compensated for by the difference in their time of bearing. A vine does better that is suffered to grow where originally planted, taking for granted that the soil has been properly prepared for its reception. Plant two cuttings in a place in the direction of the slope of the hill; one bud only above ground, the lower ends some distance apart, the top ends close together; if one dies, you have one left; if both live, pull up one to supply the vacancy elsewhere. Roots one year old are worth twenty-five dollars per thousand.

Nothing need be done the first season except to keep the plants free from weeds, and the ground well stirred. No standing water should be permitted to gather about the plants.

The second year, in January or February, or as much earlier as you please; in fact, any time after the plants have cast their leaves, cut them back to two eyes; if both start, break out the weakest, and permit but one to grow. The plants will need only the same sort of culture as the first year. Keep the soil well stirred, and free of weeds.

The summer pruning during the second year, consists in shortening or

breaking the ends of the *laterals*, which grow in the *axilla* of the leaf. Do not break them out; merely shorten them by breaking or bending over the end of the lateral.

At the commencement of the third year, the plants must be cut back to three or four eyes, in order to ensure the growth of two; after they have fairly started break all off except the two strongest. The plants must be staked this year as soon as they are pruned, and as they progress the young shoots must be carefully tied to the stake with bands of rye straw made pliable by so aking. Treat the laterals in summer, by pruning same as before advised.

The fourth year, (or first bearing year) the vines are cut back thus: there being two main shoots or canes grown the past year, one—the lowest down—is cut back to three or four eyes; two only being permitted to grow; the other is designed to bear the fruit of this year, and is cut back to about five feet (supposing it to have grown beyond that.) Some persons coil this cane into a bow or hoop by turning the upper end down and tying it to the stake with basket willow twigs. Reason, supposed that it causes a more equal diffusion of the vigor of the plant to all the grapes borne upon it; it being thought that the shoot at the extremity of the cane absorbs too great a share of the juices of the plant, from the known tendency of the upper shoot to grow more vigorously than those lower down.

The summer pruning consists in treating the laterals same as before advised, with the additional labor of bending so as to break the end of the stem (not entirely off, however,) upon which the fruit is borne, at the distance of two joints from the last bunch of grapes. Never break off the leaves of the vine in order to facilitate the ripening of the fruit. In well located vineyards nothing could be more improper, as the south or southeastern slope of a hill, unshaded by woodland, is quite warm or hot enough to make it desirable that the vine should be permitted to retain all the covering with which nature has furnished it. It destroys, too, or diminishes the vitality and health of the plant. The object which is attained by the functions of the leaves in the elaboration of the sap, is of course arrested; the whole proceeding is wrong, is unnatural, and contrary to common sense.

At the commencement of the fifth year the entire bow or shoot which bore the fruit the previous season is cut off as low down as possible. This operation would leave, of course, the two canes which have been produced from the short shoot the year before. One of these canes, the most vigorous, is to be left (as last year) to bear the fruit this year, while the other shoot is to be cut back to several eyes, (leaving only two to grow, however,) in precisely the same manner as advised at the commencement of the fourth year. When the vines get to be seven or eight years old, two bearing canes may be retained, besides the little spur which must be always left, in addition to the bearing wood, and as near the ground as possible, to produce the canes for the ensuing year.

This method embraces the whole principal of vineyard pruning, as generally adopted. There are other methods, such as spur pruning, trellis pruning, etc., which are not, however, very extensively practiced.

After the vines are pruned and tied, the next duty is to dig or loosen the soil of the vineyard. The proper time for this is as soon as the ground has become free from the frosts of winter, and the spring rains have ceased, and left the earth in a fit state for gardening.—*Home Journal.*

PEACHES.

The winter has proved too severe for this fruit. Not only have the fruit-buds been killed, but very many of the trees. Indeed, I have never known the peach to suffer more in Massachusetts. The trees which survive seem to have escaped so as by fire. There will hardly be peaches enough in this region to keep up our acquaintance with this delicious fruit.

There seems much to discourage the peach-grower in this climate. He cannot calculate upon a crop oftener than once in three years; yet, so delicious is the fruit, and so easily is the tree produced, that no one who has sufficient room should neglect its culture.

Of one thing I am satisfied. A quick growth should be avoided. To this end, a light dry soil, with a gravelly subsoil, is to be prepared. Supply little or no manure, unless it be ashes to keep off the borers, and a light dressing of chip-dung when the soil is very poor. Let the grass grow about the tree, and the closer it binds it the better.

In my garden are trees, now in a healthy condition, which have been in bearing twelve years. The ground about these trees has not been disturbed during that time; nor have they been manured at all.

In the cultivated portion of the same garden two sets of peach trees have grown, borne, died, and been removed in the same time. Hence, I infer, that in the culture of the peach in this climate the true policy is the "let alone" policy.

The prospect for apples is good. The blossoms are out earlier, by at least one week, than the average for the last fifty years, which is the 25th of May.

In Worcester county, and further east, the catterpillar is committing its usual ravages among the apple trees. There are but few in this region.

Grapes and grains look unusually well hereabouts. The season for planting has been good; and if there is not an abundant harvest it will not be because farmers slept in seed time. R. B. H.

Amherst, May 18th, 1855.

THE FACTORY OF ACIDS FOR THE MINT.

In the process of refining gold for coinage, large amounts of nitric and sulphuric acid are required. When the contract was made in Washington for the erection of a Mint, another contract was made for a supply of acids sufficient for a coinage of $5,000,000. The Secretary of the Treasury was informed that the demand for the coinage would be much larger, but his confidential advisers asserted the contrary, and he took their advice. In the spring of 1854, the Mint Acid Factory was erected near the Mission Dolores. There are two frame buildings, each of one story, one about ninety feet long, by thirty-five wide; the other is a chamber coated with lead, one hundred feet long, by thirty wide.

The sulphur to make sulphuric acid or oil of vitriol, is brought from the Island of Sicily to New-York, in vessels laden principally with fruit. At New-York the sulphur is re-shipped for this port, and costs, delivered here, eighty dollars per ton, or four cents per pound! There are large beds of sulphur in California, but in its native state it contains forty or fifty per cent. of

earthy matter, and the factory cannot use it if it contains more than fifteen per cent. No one has yet undertaken to refine it. It is said that sulphur can be furnished from China at forty dollars per ton. There is a village on the coast north of Canton occupied entirely in the mining and refining of sulphur, where it can be obtained by smuggling, for foreign vessels are not allowed to trade there. A cargo from China is now expected.

In making acid, the sulphur is burned in an oven, and the smoke passes over into a chamber of sheet lead. (Sulphuric acid does not dissolve lead.) Then steam is thrown upon the fumes, which take oxygen from the air, and the sulphuric acid settles upon the floor of the chamber. The acid is then concentrated by means of evaporating pans and a worm, and drawn into carboys. The factory can furnish three thousand pounds of sulphuric acid daily, and the capacity may be easily increased. At the present the demand is not equal to the ability to supply. The main point in making sulphuric acid, is to manage so that each pound of sulphur shall make three of acid.

The chief material used in the manufacture of nitric acid, or aqua fortis, is nitrate of soda, an inferior kind of nitre. Our supply of nitrate of soda is obtained from Iquique, in the southern part of Peru, where there is an extensive mine of it. It costs here about ninety dollars per ton. In making the acid, the nitrate of soda, mixed with sulphuric acid, is placed in an iron boiler, and a moderate heat is applied. The soda has a greater affinity for the sulphuric than for the nitric acid: and therefore it drops the latter and takes up with the former, making a sulphate of soda; and the nitric acid is driven off by the heat through a pipe into stone jars, where it settles in a liquid state. This process leaves it mixed with some muriatic acid, which, being more volatile than the nitric, is driven off by a second heating in large glass retorts. The apparatus for the manufacture of nitric acid is entirely distinct from that for sulphuric acid, and is sufficient to make twenty-four hundred pounds daily. At present, the manufacture of nitric acid is stopped for the want of nitrate of soda. Provision was made by the manufacturers to supply the amount contracted for, but the demand for the mint has been so much greater that they have been unable to meet it. A vessel has been due from Iquique for some two weeks, with two hundred and fifty tons of soda.

Muriatic acid, or spirits of salt, is made by heating common salt (muriate of soda) with sulphuric acid. The soda having a greater affinity for the oil of vitriol, deserts the spirits of salt, which goes off in steam and a huff, and cools down and settles in a liquid form in stone jars to which it is led. The other acids require a second distillation to purify them; muriatic acid is sufficiently pure, after the first process, for all practical purposes. The same boilers and receivers are used for making nitric and muriatic acid. When all are in use for making nitric, they can furnish twenty-four hundred pounds in a day; when all are used in making muriatic, they can make thirty-six hundred pounds; if equally divided between the two acids, they can supply eighteen hundred pounds of one, and twelve hundred of the other.

Nitrate of soda and sulphur are to be obtained here only by sending vessels to great distances, under special charters. This difficulty will no doubt be obviated within a few years; but, concurring with a demand for acids to refine at the rate of $20,000,000 a year, instead of $5,000,000, as contracted for, it has now almost stopped the mint.

There has been another difficulty besides the want of nitre. The glass retorts of ten or twelve gallons each, are very liable to breakage, and the supply brought from the east was sufficient for the amount of acid required

by contract; but a much larger amount having been supplied, the retorts have been broken, and the factory must send to Philadelphia for them. These retorts cost at Philadelphia $3 each; the freight hither, on account of their bulk and fragile character, is $9 each. It is a matter of surprise that some enterprising person does not establish a glass factory in San Francisco. The soda-ash, an important material, might be furnished from the acid factory, and doubtless any experienced person would, at some place on our coast, find the clean white sand necessary for vitreous manufactures. The acid factory experiences another difficulty in its want of stone ware, which can be had only at a great expense by sending to the Atlantic. The ordinary clay is not sufficiently close to prevent the acid from percolating, and it is said that there is no clay fit for the purpose in the State.—*California Chronicle.*

STAMPED ENVELOPES—MODE OF MANUFACTURE.

An account is given in the *Times*, at considerable length, of the various stages of the manufacture of this article. We have condensed portions of it below, as a subject of great general interest:

The paper from which the envelopes are manufactured is made expressly for this purpose, and bears the water mark, "P. O. D.: U. S." These initials of the Post-Office Department, United States, are so arranged that they appear on each envelope after the paper is cut. The paper is brought in large sheets from the mills, packed in cases, and carefully counted and marked in divisions of fifty sheets each. This is the first *counting*. When it arrives at the factory, it is examined and reckoned again to ascertain that the number of sheets agrees with the invoice. This is the second counting. It is then taken to the cutting-room in the basement of No. 167 Pearl-street. In this room is situated the ingenious cutting-machine, driven by steam-power. The knife, which is made of the exact size and shape of the envelope before it is folded, is placed upon a file of four hundred sheets, and being set under the lever of the press, is made to pass easily through the whole thickness of paper, producing, in about three seconds of time, four hundred envelopes, cleanly and perfectly cut, ready to receive the stamp preparatory to being folded. The sheets thus cut are counted a third time, and conveyed to the stamping or embossing room on the first floor. Here are ten or twelve ingeniously-constructed embossing presses, superintended by as many intelligent and expert young women. Each press stamps with a perfect and beautiful impression, as near as we could judge, about sixty envelopes per minute, after which, having been counted a fourth time, and the imperfect impressions, if any, removed, they are handed to another class of young women, whose business it is to place the adhesive self-sealing preparation on the outer flap of the envelopes. So skillful are the hands in this department, that one person is able to prepare and dry about *six thousand* self-sealing envelopes per hour! After this, they are counted the fifth time, and passed to the folding department. The machines employed for this purpose are among the most ingenious and perfect that we have ever witnessed. Ten or twelve of these are employed, and, like the stamping-presses, each is managed by a young woman. The press moves with the most perfect regularity. The sheets, now cut into the proper shape, stamped, and made self-sealing, are brought to this instrument, which completes the process, and, in an instant of time, prepares

each envelope for use. A feeding-band is employed, on which the flat envelope is laid; it is thus carried forward to an apparatus which places the adhesive gum on the side-flaps, folds the envelope, fastens it, and drops it into a tin box which quietly *counts* off its contents into layers of *twenty-five* each, and hands them over to be counted again, bandaged and packed, subject to the order of the Postmaster General. About fifty hands are constantly employed in this department alone; and we understand it is Mr. Nesbitt's intention to manufacture, in addition to those made for the Government, a supply of his beautiful article, unstamped, for the trade.

CHURCH ARCHITECTURE—TRINITY CHAPEL.

We are not inclined to volunteer a defence of the very expensive style of church architecture, as it is usually managed in this city. What the rent of pews will be in the chapel we are about to describe we do not know. That corporation have the means for building very costly churches, and keeping them rent free, without a dollar of individual donation. If rich men are inclined to honor God by thus giving a few hundred thousand dollars to such purposes, very well. We will commend them for their liberality; but to expend thus lavishly, and make the valuation of the pews and the taxes on that basis, so that none but the rich can afford even to hire, as is often done in this city, is a sin, of which all who participate in it must repent before they can enter heaven; for it has its beginning, and middle, and end, in pride.

Let the rich GIVE for such purposes, and furnish pews that are not beyond the reach of all but a fortunate few, and they may have churches that will eclipse the splendor of Solomon's Temple, and yet offer the Lord's Prayer in perfect simplicity of heart.

We find the following description of the new Trinity Chapel, on Twenty-fifth Street, between the Fifth and Sixth Avenues, in the *Times:*

"This imposing structure may challenge comparison among the many Christian temples rapidly rising in this city, for its characteristic purity of style and correctness of detail, from which not the minutest departure has been allowed.

"The building was consecrated a few days ago, and the following brief notice of its architectural peculiarities may serve to mark the prodigious increase of elegant and most expensive structures in our metropolis. Though Trinity Church is larger, it will not accommodate a greater number of worshippers.

"The style of Trinity Chapel is early English, being composed of nave, 46 feet by 126, and chancel, 30 feet by 43. The side walls are supported by buttresses. An octangular bell turret rises from the northeast angle of the church, capped with a pinnacle ornamented by crochets and a finial. The chancel is apsidal. From this aspect is obtained the best view of the building.

"The font is simply composed with four large buttresses and a large wheel window. The principal entrance has deeply splayed jambs, the columns being richly ornamented with foliated caps.

"On entering, the visitor cannot fail to be struck with the elegant propo-

tions of the building and the height of the open roof. The chancel arch and the illuminated timbers of the roof form a perfect *chef d'œuvre* of architectural effect. The walls are pierced with deep, narrow windows of stained glass, and those in the chancel are filled with a well-painted Scriptural illustration of the Transfiguration. The inside walls are of Caen stone; the roof is supported on carved stone corbels, and illuminated with a blue ground dotted with gold stars.

"All the furniture is of oak, most elaborately carved. The chancel is surrounded by canopies over seats occupied by the clergy. The altar (which is the gem of the church,) is elaborately carved and richly illuminated with monograms and symbols. The font is of Caen stone, richly carved and elegant in design. The pulpit is gorgeously illuminated and surmounted by a canopy of light and graceful proportions, the finial being a spear and cross indicative of religion triumphant. The organ is situated in a room which communicates with the chancel and nave by two arches—one to each. In the arches are carved screens. This position of the instrument is not modern, being the revival of a better practice than placing it at the west end in a lofty gallery.

"The floor is of illuminated tiles, and the steps of the chancel are of marble. Although the general effect is pleasing, because there is no incongruity; the general design is carried into all the minutæ of detail. Nor is there anything unreal—no plaster nor artificial and temporary expedient to produce effect. Though not the largest, perhaps it forms the most *aristocratic* church interior in the city.

"Trinity Chapel (like St. Paul's and St. John's) is sustained, and has been erected by the friends of the Corporation. The design is that of Messrs. Upjohn & Co.; the masonry was by Mr. Thomas Williams; the carpentry was entrusted to Mr. George Riker; the illuminations were executed by Mr. Ackeroyd; and the stained glass by Messrs. Sharp & Steel. The paintings in the chancel-window are from a design by Mr. Robert Weir, of West Point. The turret holds a chime of three bells, cast in England."

BREECH-LOADING CANNON.—We saw on exhibition, in Wall street, in front of the Merchants' Exchange, on Tuesday, a large cannon of mammoth dimensions, and apparently of tremendous death-dealing propensities.

It is the invention of John P. Sheukl, a German, now a resident of East Boston, Mass., where the invention was projected and completed, under the auspices of a number of wealthy citizens in Boston.

The cannon is about six feet in length, and weighs in the vicinity of 1300 pounds. Its qualities have been thoroughly tested, and the invention pronounced one of the most important of the 19th century, so far as relates to naval warfaring, for which this instrument is peculiarly adapted.

At a recent trial of this gun, it is stated that a conical ball weighing nine pounds, was thrown a distance of 4 5-8 miles, with three pounds of powder.

One great advantage this cannon has over the ordinary gun consists in the fact that it can be loaded and fired fifteen times a minute, and only requires three men to work it, while the guns now in use in our navy want ten or twelve men. A patent for the manufacture of this kind of cannon has been taken out for the United States, England, France, and Belgium.—*N. Y. Paper.*

DINING-ROOM STOVE.

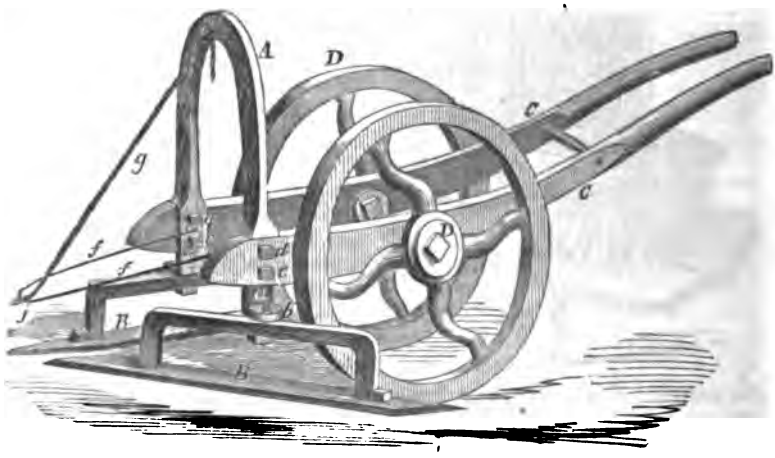
We call the attention of our readers to the new cooking-stoves described upon the last two pages on the cover of this number. Notwithstanding stoves have been so long and in such general use, and, consequently, have had such an amount of energy, talent, and capital employed in their perfection, after a careful examination of the patentee's model, his claims and specification, we must confess our opinion of this stove is very favorable. We can appreciate views as to the defects of other patentees; and we can not see why his improvements do not produce the advantages which he claims. The arrangement for the dining-room stove, represented by the cut, we also highly approve for the purposes designed. It is arranged on the same general plan of the kitchen-stove, except that the oven is made single instead of double, and is brought forward over the second tier of boilers.

It is a stove long wanted for dining-room purposes, in private families, in this and other cities. It is manufactured by James Wager, Troy, N. Y., either for wood or coal.

American Agriculturists in Palestine.—The New-York Evening Post publishes an interesting account from a new class of missionary laborers in Palestine—a company of Americans who have emigrated to the neighborhood of Joppa, and commenced an agricultural mission, having in view the general improvement of the country, and particularly the conversion, elevation, and general improvement of the poor Jews of Palestine. This company, after leasing a small tract of land on the plain Sharon, an elevated, healthy, fertile and beautiful region, in the immediate neighborhood of the city of Jaffa, (the ancient Joppa) have finally purchased and made it their permanent abode, and have commenced agricultural operations, employing the poor Jews to assist them, and thus affording them support and protection. The sheiks, who were at first suspicious of them, and demanded tribute, after narrowly watching the movements of the Yankees for some time, have at length become their fast friends; and the Turkish authorities also manifest great interest in the experiment of restoring the land to its ancient fertility. The success of this enterprise has encouraged the formation in England of two societies on a similar basis, one among the Jews and the other among the Christians. The Christian society has already selected the site of its mission in the neighborhood of Cesarea, which lies about thirty-five miles to the north of Jaffa, a heap of ruins tenanted by jackals, on the shore of the Mediterranean.

NEW AMERICAN PATENTS.

ROBINSON'S HAND CULTIVATOR.



The above engraving is a perspective view of an improved cultivator, designed for garden or field cultivation, and particularly adapted to drill sown wheat and other small grains. The patentee is Jonathan A. Robinson, of Fremont, N. H. It was patented on the 20th of last February. The machine or implement consists of cutters attached to the two ends of a yoke, of such height as to pass over the tops of the plants, the knives being adjusted to run as near the plants as may be desired, and the whole being made to travel on wheels.

A is a yoke or bow, to the lower ends of which are secured the cutters, B B, each being allowed to swivel around the point, *a*, the nut, *b*, serving to hold them secure when placed in the required position. By this method of adjusting the cutters, they are made to cut more or less distant from the rows of plants.

C C are the handles for guiding the machine. They carry short shafts, D, on which are the wheels; *c c* are square-headed pins which pass through the lower ends of the handles, and screw into the end of the yoke bow. This allows the bow a limited motion to make the cutters dip more or less beneath the surface; *a* shows another square-headed pin which passes through a slot in the butt of the handle, (one for each handle,) and also screws into the yoke, A, the length of its slot. The yoke is by these pins set in position for the purpose of adjusting the dip of the cutters. By tightening this screw, the cutters are held in place.

A device is employed to make each cutter move at an equal distance from the row of grain, or whatever the crop may be; *j* is the guide-point, and is held over the center of the space between the points of the cutters by a bent wire, *f f*, which is attached to each arm of the yoke, and is supported by a chain, *g*, from the apex, *i*, of the yoke, A. This guide-point is for the pur-

pose of guiding the machine, the points of the cutters being under the ground when the machine is in operation. The machine is used by wheeling it forward like a barrow, the guide-point, *j*, being kept exactly over the row. It will be observed that, as the cutters can be set and adjusted to any distance from the plants, the weeds and grass can be cut up very near the rows.

Mr. Robinson informs us that he has hoed small carrots with this machine, the points of the cutters being 1¼ inches apart, and he walked right along, hoeing them perfectly. As the cutters are adjusted to cut a little more than half way to the adjoining row, the work is done thoroughly, no unhoed space being left between the rows. The cutters being set at an acute angle, they cut the weeds easily. They can also be adjusted to take the earth away from, or carry it up to the rows.

More information may be obtained by letter, addressed to the patentee and manufacturer, at Fremont, N. H.

Improvement in Vehicles. By Abram J. Gipson, of Clinton, Mass. Dated, July 25, 1854.—This invention consists in the combination of arch-springs connected and bearing from axle to axle, and in placing the foremost pair of wheels forward of the point of attachment of the perch and axle, by extending the axle outwards, and then giving it a bent form forwards, the required length; thence bending the axle outwards again, enough to admit of placing the wheels the usual distance apart, and allowing them to revolve. By this means, the foremost wheels are brought a sufficient distance from the hindmost, to allow of entering the carriage easily and readily, without coming in contact with either pair of wheels. It also allows of bringing the hindmost wheels forward from their usual position, at the same time preserving the same facilities for entering the carriage. By this arrangement the vehicle is made shorter, and turns in less space than what a straight axle would admit of. By the form and arrangement of springs, which support the body of the carriage, the amount of material used in making springs is reduced.

The patentee says, "I claim giving the forward axle a bent form in combination with arch-springs, connected and bearing from axle to axle, for the purpose and in the manner and form substantially as set forth."

Improvement in Horse-Shoes. By William H. Towers, of Philadelphia. Dated, July 25, 1854.—This invention consists in attaching to the heels of the shoe curved springs, having corks formed on their flexible ends, or otherwise made rough to prevent the hoof from slipping over the surface of the ground, and secured firmly in spaces on the under surface of the shoe by screws, or other means, in such a manner as to give an elasticity to the heel, and by enabling it to slightly yield to the pressure of the horse when planting his feet, legs, and other sensitive parts of the horse, heretofore affected by the solid blow given when planting the feet, and also enable the springs and corks to be readily removed, and others, more or less roughly shod, as occasion may require, substituted in their places, without removing the shoe from the hoof.

The patentee says, "I claim the combination of the steel or other elastic springs, having corks formed on their flexible ends, and capable of being removed and attached with facility and dispatch, with the main body of the shoe, substantially in the manner and for the purpose set forth."

IMPROVEMENT IN MACHINES FOR STICKING CARD TEETH. By G. W. COATS and J. RUSSELL, of Springfield, Ohio. Dated, August 1, 1854.—The patentees say, "We claim the mode of imparting the intermittent motion to the main carriage, for spacing the teeth and reversing the same, by means of the screw-leader attached to the main carriage, and passing through a nut mounted in suitable boxes, and rotated by cog-gearing, as described, when this is combined with a clutch, operated by a cam, to clutch and unclutch the wheel which receives motion from the wheel or wheels on the main shaft, and imparts the required and measured intermittent motion to the nut, substantially as and for the purpose specified. We also claim, in combination with the mode described of imparting the spacing motion to the main carriage, the employment of the cams on the main carriage, which, at the end of each traverse motion, act on a lever connected and combined with and operating the clutch, to clutch and unclutch the wheel which receives motion from the main shaft, to operate the shifting-wheel which operates the double clutch on the main shaft, substantially as and for the purpose specified. We also claim, in combination with the mode described of operating the main carriage, the mode of operating the second carriage, which holds the sheet of leather, to determine the space between the rows of teeth by means of the shifting-cam, called the twilled cam, and the shifting-sector cog-wheel, which, in turn, imparts motion by the cog-wheels and shaft to the cog-wheel through which passes the feathered shaft, mounted on the main carriage, and which, in turn, imparts the required motion to the drums for lifting the second carriage at the end of each complete motion of the main carriage. And in combination with this, we also claim making the nut on the screw-leader in two parts, divided by a plane at right angles to the axis, when the two parts are attached together so that they can be turned on each other, substantially as described, so that the threads can be set to any wear of the threads, and thus avoid end play, as described. We also claim making the arbors of the two rollers with cylindrical bosses, to determine their distance apart, in combination with the mode of mounting them between boxes, and without interposed boxes, the said arbors being prevented from having end play by means of V shaped or curved fillets on the arbors, fitted to corresponding cavities in the boxes, substantially as and for the purpose specified. We also claim mounting the bending fingers in the sliding top-plate independent of, and below the slide or carrier of the former, around which the teeth are bent, the said carrier being provided with an inclined plane or cam, acted upon by a like inclined plane or cam on the top-plate of the fingers, substantially as described, so that, as the fingers are drawn back, the former shall be lifted up preparatory to its back motion, as fully set forth."

FOR SELF-LOADING AND DUMPING CARTS. By SANFORD STONE, of Kirkersville, Ohio. Dated, August 1, 1854.—The nature of this invention consists in arranging the cart-body with a scraper on its fore end, and so as to tilt forward to the ground, for the purpose of scraping up the earth and loading itself immediately from the ground by its own action; secondly, in employing an endless, horizontal belt for and in the place of the bottom of the cart-body, so arranged and operated, by any suitable means, that it will be made to revolve in the proper direction during the time of loading and unloading the cart, but will not act while drawing the cart from place to place, for the purpose of assisting the operation of loading and dumping; thirdly, in the combined arrangement of the cart-body with the fulcrum on which it tilts, at a suitable distance above the revolving axle of the cart, of a

driving cog-wheel, and two pinions placed upon shafts, by which the endless belt is driven in such a manner that the forward pinion will play into the cog-wheel when the cart-body is tilted forward for loading, and the hind pinion play therein when tilted backward for dumping; but when in a horizontal position neither pinion will be geared therewith; fourthly, in the arrangement of the rack on the cart-body, the pinion on the draught frame playing therein; the ratchet-wheel on the pinion-shaft and the two spring-clinks acting on opposite sides of the ratchet-wheel, in such a manner that the cart-body may be tilted either way to any position, and prevented from moving therefrom in either direction.

The patentee says, "I claim, first, arranging the cart-body with a scraper on its fore end, and so as to tilt forward to the ground, for the purpose of scraping up the earth, and loading itself immediately from the ground by its own action. I also claim the employment of an endless, horizontal belt, for and in the place of the bottom of the cart-body, so arranged and operated, by any suitable means, that it will be made to revolve in the proper direction during the time of loading and unloading the cart, but will not act while drawing the cart from place to place, for the purpose of assisting the operations of loading and dumping, substantially as herein set forth. I also claim the combined arrangement of the cart-body, with the fulcrum or centre on which it tilts, (at a suitable distance above the revolving axle of the cart,) the driving cog-wheel on said axle and two pinions placed upon the shafts, by which the endless belt is driven in such a manner that the forward pinion will play into said cog-wheel when the cart-body is tilted forward for loading, and the hind pinion play therein when the cart is tilted backward for dumping; but when in a horizontal position, neither pinion will be geared therewith, for the purpose of operating the endless belt when and only when required, substantially as herein specified. I also claim the combination and arrangement of the rack on the cart-body, the pinion on the draught-frame playing therein, the ratchet-wheel on the pinion-shaft, and the two clinks on opposite sides of the ratchet-wheel, in such a manner that the cart-body may be tilted to any position, and immovably held there, substantially as described."

Improvements in (Revolving Breech) Fire-Arms. By Josiah Ellis, of Pittsburgh, Pa. Dated, August 1, 1854.—This improvement consists in the use of a vibrating stud in the trigger, in combination with a hammer with a chamfered or bevelled edge, and with a notch near the extremity of its toe, which is applicable to all kinds of repeating fire-arms, by means of which, by simply pulling the trigger, the hammer is raised to full cock, or fired at pleasure, the stud yielding laterally to allow of the descent of the hammer, and recovering its position on the toe of the hammer for repeated action.

The patentee says, "I claim, first, the use of a stud in the trigger, vibrating laterally in combination with a bevel-edged hammer, with a notch at its toe, by means of which, by simply pulling the trigger, the hammer is raised, and may be either allowed to stand at full cock, or fired at pleasure, while the trigger, after firing, will regain its position for repeated action; second, the use of a double spring, or spring and lever, for the purpose herein before set forth; third, the mode herein before described of locking the rotating breech at the moment of firing, by means of the locking-bolt, in combination with the cam shoulder on the trigger, and the hexagonal neck of the rotating breech, which, nevertheless, permit the breech to be fully rotated by hand, or otherwise, when the trigger is not drawn back."

IMPROVEMENT IN MACHINES FOR MOULDING CRACKERS. By PHINEAS EMMONS, of New-York, N. Y. Dated, August 1, 1854.—This invention consists in arranging a set of feed-rollers, having semi-circular channels, transversely of their axes, and matching together so as to form or cut a cylindrical strip of dough as it passes between them, in combination with a third roller, made like the foregoing, a little lower down than the lower feed-roller, and in front of it, so as to form a continuation of the channel-way for the cylindrical strip of dough, and for cutting the same into short lengths, suitable for crackers, by means of a series of cutters placed in its channel-way, and operating on the strip of dough as it is fed through the rollers. Also, it consists in the use and arrangement of a pair of moulding-wheels, having in their inner faces a semi-circular, concave, annular groove, the said wheels being so adjusted on their axes as to form an annular core at the junction of the two semi-circular grooves, at the front edge of the wheels, and opening obliquely backwards, so as to allow the ball of dough, when moulded by the rotary action of the wheels, to fall from the machine; and, also, it consists in the use of feed and guide-cords, for conveying and confining the dough in passing through the machine, with suitable mechanical devices for propelling it.

The patentee says, "I claim the use of a roller, made substantially as set forth, with cutters in its channel, in combination with the feed-rollers, for forming and cutting dough into suitable shapes for making crackers, substantially as set forth. I also claim as new, for rolling dough in ball, the conical or nearly disc form of the wheels, whereby they are made, by their oblique position on their axis, to combine a twisting and rolling motion, the rolling motion only having been heretofore employed in cylindrical grooved rollers."

IMPROVED MODE OF CONSTRUCTING IRON BUILDINGS. By AMOS J. SAXTON, of Brooklyn, N. Y. Dated, August 8, 1854.—The patentee says, "I claim, first, the method, mode, manner, or process of connecting and combining all the different *points*, by all or any of the improved *joints*, so arranged at all of the different *points*, by all or any of the different joints, at the sectional points, as herein set forth and substantially described. The use of screws, rivets, bolts, or nails, is not required in the erection of iron frame fire-proof, or other buildings; second, I claim the method, mode, or process of erecting iron fire-proof and other buildings, and of uniting or connecting each substantial part to each other, or of connecting them at all of the sectional points by the different joints, as described, without the use of screws, rivets, bolts or nails, as herein set forth, and substantially described; third, I claim the method, mode, or manner of so arranging and combining the different points of the columns, posts or studs, girders, beams, sashlers, and interior plates, (or any of the sectional parts of the buildings,) with the different joints, so combined in such a manner as when the different points are properly united and combined with the different joints in all of the sectional parts, they form a substantial iron frame fire-proof or other buildings, as substantially described in all of the different combinations."

IMPROVEMENT IN LASTING INSTRUMENTS. By THOMAS DOUGHERTY, of Erie, Pa. Dated, August 1, 1854.—The patentee says, "I claim so constructing the machine as above described, that when drawn up, I have ample room for putting in the tacks or pegs, and having a heel which serves as a fulcrum, so that by pressing back the top of the machine, I am able to raise the entire jaw clear of the sole, and prevent the jaws from ruffling up the inner sole."

IMPROVEMENT IN MACHINES FOR GRADUATING CARPENTERS' SQUARES, By N. MILLINGTON and D. J. GEORGE, of Shaftsbury, Vt. Dated, August 8, 1854.—This invention consists in providing twenty-four or more gravers. about four inches long, firmly set in metallic handles, about twenty inches long, and attached to a rod about one-fourth the distance from the front end of the handles; the rear ends being adjusted by screws and springs. These handles are placed side by side, one inch from centre to centre, and are attached to a carriage about one foot wide, and two feet long, which slides laterally, sufficient to make the longest cross-mark on ways, and is pressed forward to cut the marks by a wheel in the rear, having on its periphery a succession of eight cams, (to divide the inch into eighths,) the highest point of each rising to the same plane, but differing in depth, to give the desired length of marks to each of the several divisions of the inch. The square table graduated is confined to the front rail of a carriage directly under the points of the gravers, which is moved at right angles from the motion of the gravers by an inclined plane; and the motion of the two carriages so arranged that, as often as the square is pressed forward one-eighth by the inclined plane, each of the gravers cuts at the proper place the desired cross-marks for the inch, half, quarter, and eighths, and as there are twenty-four gravers, each graduating one inch, the whole square is completed whilst the square moves longitudinally but a single inch.

IMPROVEMENT IN POLISHING-WHEELS. By BENJAMIN WEBB, of Unadilla Forks, N. Y. Dated, July 25, 1854.—This invention consists in providing a polishing-wheel, the periphery of which is formed of a series of blocks, each standing upon a small spiral or other spring, the latter resting on a solid surface of the central portion of the wheel; these blocks, forming an outward, circular surface, are bound by a leathern strap, on which the emery or other polishing substance is placed, so that an elastic surface is formed for grinding, by means of which, the article to be polished, when pressed to the surface of the wheel, comes in contact with a larger surface than it otherwise would, and the polishing is done in a more uniform and perfect manner.

The patentee says, "I claim the forming of an elastic polishing-wheel, to be used for polishing and grinding, by the use of a series of springs placed under sections of the surface moving vertically from the centre, and independent of each other, substantially in the manner and for the purposes described, the whole being combined and arranged substantially as above set forth."

IMPROVEMENT IN WARPING AND DRESSING YARNS. By SAMUEL T. THOMAS, of Lawrence, Mass., and ELIZA ANN EVERETT, administratrix of EDWARD EVERETT, deceased, late of Lawrence, aforesaid. Dated, August 1, 1854.—The patentees say, "We claim, first, warping and dressing yarns directly from small spools or bobbins, instead of large section beams heretofore used, to sectional loom beams, for the purpose of securing a uniform tension in the yarns wound upon the loom beam, and also affording greater facilities for readily producing a variety in the stripe of the fabric, as heretofore set forth; second, is claimed our improvement in the fan cylinder for drying the yarns, which consists in a cylinder composed of slats, arranged with spaces between them, and around which slats the yarns are made to pass, revolving fans being arranged within the said cylinder, and revolving independently of, and at a much more rapid rate than said slatted cylinders, whereby a large portion of the yarns are kept in a gentle current of air, and rapidly dried, as above described."

IMPROVEMENT IN BUGGIES. By JAMES S. MCCLELLAND, of Jefferson, Ind. Dated, August 8, 1854.—This invention consists in arranging the body of the buggy upon spring-couplings, in sets or pairs, in such manner as that additional pairs or sets of springs shall come into action as the weight is increased on the body, and this, in combination with the fastening of the body forward of its centre to one set of springs, and in rear of its centre to another set of springs, so that the body may have a rocking motion in the direction of its traverse corners, and yet the tendency of the body to yield in one point be counteracted by its lifting the spring in an opposite point.

The patentee says, "I claim the arranging of the body upon spring-couplings in such manner as that additional pairs or sets of springs shall come into action as the weight is increased on the body, and this, in combination with the fastening of the body forward of its centre to one set of springs, and in rear of its centre to another set of springs, so that the body may have a rocking motion transversely, and the tendency of the body to yield at one point be counteracted by its lifting the spring in another point, substantially as described."

IMPROVEMENT IN MACHINES FOR TURNING IRREGULAR FORMS. By AARON D. CRANE, of Newark, N. J. Dated, August 15, 1854.—The nature of this invention consists in cutting or turning wood or metal with regular or irregular curved, plain, or spiral surfaces, by means of a series of cutters or knives, so adjusted on a shaft as to travel in a longitudinal direction the length of the materials to be cut. Said shaft being adjusted in a line parallel with the axis of motion of the said materials, and said cutters and materials both revolving at a high rate of speed in the same direction.

IMPROVED MODE OF SECURING HUBS TO AXLES. By COOK DARLING, of Utica, N. Y. Dated, August 15, 1854.—This improvement consists in providing a mechanical arrangement of parts, to be fastened upon the outer end of the wheel-hub, by which a pair of movable guard-plates are made to embrace the end of the axle as it extends through the hub, when the wheel is put on, and to hold the wheel and prevent it from coming off, unless these guard-plates (held together by a spring in a box) are forced apart by means of a key, so as to let the knob which is formed on the end of the axle pass between them.

IMPROVED ARRANGEMENT OF MEANS FOR WORKING AND STOPPING CHAIN CABLES. By THOMAS BROWN, of London, England. Patented in England, April 20, 1847. Dated, July 25, 1854.—"I claim the arrangement of the capstan, the removable rollers, and the sockets for said rollers, in such a manner, and having such relations to the hawse-holes, chain-locker, deck-pipes, and under-lifting stoppers, that a chain cable can be continuously hove in by means of said capstan and rollers, or be directly run out of the lockers, without any previous overhauling, substantially as herein set forth. I also claim the arrangement of the within described under-lifting bow-stoppers and after-stoppers, by which more cable can be gradually and controllably given to a vessel, whilst riding heavily at anchor, substantially as herein set forth."

VICTORIA BRIDGE, MONTREAL. *Extract from the Report of Mr. Robert Stephenson on the Grand Trunk Railway of Canada.*—Regarding the first point, I do not feel called upon to enter on a discussion of the different opinions which have been expressed by engineers both in England and America, as to the comparative merits of different classes of bridges, and more especially as between the suspension and tubular principles, when large spans

become a matter of necessity. It is known to me, that in one case in the United States, a common suspension bridge has been applied to railway purposes; but from the information in my possession, from a high engineering authority in that country, the work alluded to can scarcely be looked upon as a permanent, substantial, and safe structure. Its flexibility, I was informed, was truly alarming; and, although another structure of this kind is in process of construction near Niagara, in which great skill has been shown in designing means for neutralizing this tendency to flexibility, I am of opinion that no system of trussing, applicable to a platform suspended from chains, will prove either durable or efficient, unless it be carried to such an extent as to approach in dimensions a tube, fit, itself, for the passage of railway trains through it. Such bridges may doubtless be successfully, and perhaps with propriety, adopted in some situations; but I am convinced that even in such situations, while they will, in first cost, fall little short of wrought-iron tubes, they will be more expensive to maintain, and far inferior in efficiency and safety. I can not hesitate, therefore, to recommend the adoption of a tubular bridge, similar in all essential particulars to that of the Britannia over the Menai Straits, in this country; and it must be observed, that the essential features being the same, although the length much exceeds that of the work alluded to, none of the difficulties which surrounded its erection will be involved in the present instance. In the Britannia, the two larger openings were each 460 feet, whereas, in the proposed Victoria there is only one large opening of 330 feet, all the rest being 240 feet. In the construction of the latter, there is also every facility for the erection of scaffolding, which will admit of the tubes being constructed in their permanent position, thus avoiding both the precarious and expensive process of floating, and afterwards lifting the tubes to the final level by hydraulic pressure. In speaking of these facilities, it is a most agreeable and satisfactory duty to put on record that the government engineering department has, throughout the consideration of this important question, exhibited the most friendly spirit, and done every thing in its power to remove several onerous conditions, which were at one time spoken of as necessary, before official sanction would be given for the construction of the work.

ROCKET BULLET.—An English Invention.

A writer in a foreign journal says: "I have lately made some practical trials of a species of projectile, which I have termed a "Rocket Bullet," possessing very superior powers of range; indeed, it seems to be capable of a longer range than any other known missile. This result is arrived at by preserving the initial velocity of the bullet unimpaired, or, indeed, even adding to its rate of movement, by means of the propulsive aid of a composition contained within the bullet, reacting in the manner of a rocket; at any rate, as the composition is fired by the explosion of the charge of the piece, the vacuum produced by the passage of the bullet through the air is at least filled up, so as to sustain the velocity, if it does not positively accelerate it by its reactive force.

"The bullet is made hollow, cylindrical, and tapered to a point at one end, and filled with a rapidly-burning composition, which is rammed tightly into it. This cylindro-conoidal ball is made a good fit to the barrel of the piece, and it is rammed down upon the powder charge without the use of any

wadding. To prevent the explosion of the charge from firing too much of the internal composition, the part nearest the mouth of the ball is of a slower burning character than the rest.

"The ball is about double the weight of a spherical projectile of the same diameter. It is obviously most suitable for heavy ordnance, where long range is most particularly required. To give great accuracy of flight, spiral grooves may be formed on the cylindrical part, the ball being fired from a smooth bore. I am aware that a rocket has been proposed to be fired from cannon, with a fuse to ignite its composition when at its greatest elevation; but the complexity of this plan has led to its failure."

WATER PRESSURE ENGINES.

There is, and for many months has been, a water-pressure engine in daily use for driving the press of one of the largest and most respectable of the daily newspapers in Boston. This city is supplied with fresh water by an aqueduct leading from Cochituate Lake, the level of which is sufficiently high to supply the water to every desirable point without pumping; and the quantity is sufficient for all the necessities and luxuries of the scrupulously cleanly citizens, leaving still a considerable excess to be expended in fountains, and for other purposes. Under these circumstances, the proprietors of the *Daily Traveller*, having ordered a new and fast press to be located in the densest portion of the city, sought for a suitable prime mover; and their inquiries resulted in the employment of Mr. Samuel Huse, an ingenious and skilful mechanic, and one of the managers of the Water Works, who constructed for them a "water-meter," or rotary water engine, of sufficient power to impel their press when the water is at the lowest, the arrangement involving but a reasonable expenditure for water rent. The machine consists of a hollow cylinder, 10 inches deep, and 16 inches in diameter, inside which is a cylinder about 6 inches in diameter. This inner cylinder has flanges, on which are four valves, or folding wings, extending from one end to the other of the cylinder, and attached to the flanges by hinges. The valves, when folded, are shut into the cylinder, and cover a little more than half its surface. Upon one side of the meter, the space between the inside of the hollow cylinder, and the surface of the central moveable cylinder, is filled up to form an abutment, occupying something more than the width of one of the valves. This abutment is made to fit so as to prevent the water from passing. The water enters the meter upon one side of this abutment, being discharged into a sewer from the other side. The meter is set so that the force of gravity assists in opening the valves as they successively emerge from under the abutment, and also acts in closing them when approaching it from the opposite side. With every revolution, a given quantity of water passes through the meter, a quality which, in fact, constitutes its sole value as a water-meter. The number of revolutions is, of course, registered by suitable mechanism, so that the precise amount of water expended in driving the engine, which is estimated to work with about three horses' power, may be exactly ascertained. This engine is supplied with Cochituate water by a two inch lead pipe, and is regulated by hand by means of a screw valve. It is said to perform very satisfactorily, and to give a tolerably large per centage of power, in proportion to the fall and amount of water consumed. It is believed to be the only instance of the permanent and regular employment of such a prime mover for any situation of importance.

MISCELLANY.

To Non-Subscribers.—Through the medium of a friend, this number will be forwarded to many gentlemen, engaged in agricultural pursuits, who are not subscribers to the work. Should they wish to become such, by forwarding their orders and address, with a remittance, as advised on the 2d page of the cover, the work will be regularly sent.

The Monument to J. S. Skinner, and Fund for his Widow, progresses very slowly; but we hope that better times, and the bright skies of this beautiful season, will open the hearts and hands of our readers. From some thousands of circulars issued, we have received only about one hundred replies. Will the reader enclose to this office any amount he may be induced to give for this noble object, before it passes out of his mind.

John S. Caulkins, 69 Maiden-Lane.—We have lately had our attention drawn to the umbrellas and parasols manufactured at this well-known establishment. If any better articles are made, or at more reasonable prices, they have not attracted our notice. We commend them to our readers, who are in need of such articles, at wholesale or retail.

Industry of Ware, Mass.—The Otis Company run four cotton mills, employing 650 hands, working up one hundred bales of cotton per week—requiring 20,000 spindles and 600 looms, and making about 6,500,000 yards of cloth per annum. The Company pays out about $11,000 per month for help. They have just erected a large brick building near the new brick mill, which contains the cloth room, a room for drying, another for sizing, and another still for drying. This contains a large machine composed of cylinders, which being heated, dry the yarn as it passes over them.

The Otis Company purpose soon to build a new mill, which is to take the place of the two old ones. This is to be a model mill, with improved machinery.

Trade in Ware.—We heard a good business man say this week, when in Ware, that there are more goods sold there annually than in any other town in the county. Many of the citizens of the neighboring towns find a market for their wool and produce there, and consequently do most of their trading there.

Bonnet Business.—L. Demond does a large business here in the manufacturing of straw bonnets. He has employed, during the past winter, about 120 persons. Thus is a large amount of stock brought into town, which, after being made ready for market, is sold, thus benefitting both the employer and employees, and thereby enhancing the business of the village.

Woolen Mills.—Stephens and Gilbert each has a mill, which, when running full, requires 4000 lbs. of wool per week, with seven sets of cards, giving employment to 110 hands. These two factories, according to estimate, consume annually more than 200,000 lbs. of wool, and give employment to about 225 persons, producing about 750,000 yards of cloth.

The aforesaid brief statements give one an idea of the amount of manufacturing done in old Ware.

THE ERICSSON'S TRIAL TRIP.—The steamship *Ericsson* (formerly Caloric) made a very satisfactory trial trip down the Bay recently, with her owners and a number of invited guests on board. In her machinery Capt. Ericsson claims to have made an important improvement on that in general use in steamships. The boilers of the Ericsson are filled with fresh water, which, by the aid of the Captain's improvement, he claims, will not be wasted by use, and that, consequently, she may carry the same out from New-York to Havre and return without diminution other than what might result from accidental leakage. In addition, she has apparatus for distilling 1000 gallons of fresh water from salt a day, so that the great bulk of the water tanks is saved for freight. The room occupied by the machinery and boilers is unusually small, and the necessary consumption of fuel, it is said, greatly reduced from the old standard. It is stated that her furnaces cannot consume over thirty tons a day, and it is expected the Atlantic voyage will be made on a ton an hour. The speed of the ship on her trial trip was about twelve miles an hour, with an alleged consumption of fuel not exceeding three-fourths of this quantity. The underwriters rate the Ericsson the best and strongest built vessel in the United States. She is provided with four large quarter-boats, all slung, and two deck-boats, all of them Francis' life-boats. In addition, she carries a life-cart mortar and lines, which, in case of her being driven upon the coast, would enable her at once to communicate with the shore. The owners of the Ericsson intend to send her as a contribution of American skill to France.

RAILROADS IN MAINE.—The following table, condensed from the *State of Maine*, shows the cost, length, and business of the railroads of the State, for 1854:

	1854.			
Name.	Length.	Cost.	No. of Passengers.	Total Earnings.
Atlantic and St. Lawrence,	140	$6,019,929	185,105	$470,647
Androscoggin and Kennebec,	55	2,196,334	129,045	178,353
Androscoggin,	20	343,317	22,235	29,396
Bangor and Piscataquis,	13	178,233	76,980	44,889
Calais and Baring,	6	277,780	16,720	31,640
Kennebec and Portland,	72¼	2,613,470	268,992	217,357
Machiasport,	7½	100,000		7,200
Portland, Saco, and Portsmouth,	51	1,315,976	284,635	272,330
York and Cumberland,	18	765,018	82,640	30,712
Buckfield Branch,	12			
	404	13,759,988	1,066,352	

The footings for the two years just past stand as follows:

	1853.	1854.	
Length,	404	404	
Cost,	$12,681,878	$13,759,988	$878,110 inc.
No. of Passengers,	919,106	1,166,352	67,246 "
Earnings—Passengers,	609,988	672,392	71,404 "
" Freight,	411,495	587,388	75,893 "
" Miscellaneous,	52,235	41,019	11,218 dec.

SUGAR TRADE OF THE UNITED STATES.—The total receipts of foreign unrefined sugar into the United States, for the year ending December 31, 1854, were 165,924 tons against receipts of 212,746 tons in 1853, and the quantity taken for consumption in 1854 was 150,855 tons against 200,610 tons consumption in 1853, 196,558 tons in 1852, 181,047 tons in 1851, and 143,015 in 1850, being a decrease in the consumption of 1854, as compared with

1853, of 49,756 tons, or over 24 per cent., while the total consumption of 1854 (assuming the stock of domestic 1st January each year to be equal) was 385,298 tons, against 372,989 tons in 1853, or an increase of nearly 3½ per cent.

The very large falling off in the quantity of foreign taken is attributed chiefly to the unprecedented crop of Louisiana, which was 449,324 hhds., and the low price at which it was offered, the yield being by far the largest ever gathered in that State, though produced from a smaller number of plantations, some growers having abandoned the culture of the cane and substituted cotton, the returns obtained not being considered remunerative.

The quantity of sugar made from molasses the past year shows a considerable diminution when compared with the quantity so produced in 1853. It is estimated at 12,628 tons, or 50,000 hhds., 53,000 yielding 500 lbs. each, and 3,000 of concentrated 600 lbs. each, against 66,500 hhds. (14,977 tons) in 1853; the estimate given is believed to be rather over than under the actual amount. This falling off is owing, in a great measure, to the low prices that have ruled for raw sugar, and the high rates which molasses has commanded, thus diminishing the profits and production, and rendering the business unremunerative. If to the above figures we now add the yield of the maple tree, say 12,300 tons, and the estimated consumption of California and Oregon, 4,700 tons, would give a total comsumption in the United States of 414,931 tons.

Splendid Panorama.—The Panorama of Mr. J. R. Smith, now on exhibition in Broadway, is the finest work of that description we have ever seen. The views of the principal European cities are admirable, while the closing scene, the view of the city of Sebastopol, with its fortifications, harbor, and fleets, the latter both at rest and in action, and also in a storm, is one of the most capital scenes that can be imagined. We are glad to find that he is so well patronized.

Johnson, Cox, Lesley & Co., No. 376 Broadway, are Agents for Sadler's Stoves advertised on the last two pages of the cover.

General Agency.—The publisher of *The Plough, the Loom, and the Anvil*, believing it in his power to be of essential service to the readers of that journal, in the purchase or sale of various articles, and the transaction of various kinds of business, would announce to them that he is ready to execute any such commission which he may receive, including the purchase of books of any description; implements connected with agricultural, manufacturing, or mechanical operations; artificial manures; farm and garden seeds, etc., etc. One of the gentlemen connected with the journal is a proficient in music, and experienced in the selection of piano-fortes, flutes, etc., and will execute orders in that department.

He will also act as agent in the purchase and sale of Real Estate.

☞ Particular attention to business connected with the Patent-Office.

School-Teachers. — Having had occasion to furnish teachers for some of our Southern friends, we have been fortunate enough to learn of several young ladies who are admirably well qualified for families or schools, and if any are in need of such, a letter addressed to us will receive immediate answer. We shall not fear to guarantee that any reasonable expectations will be fully met. Some of them are desirous of going South.

Letters of inquiry on these matters will be promptly attended to if addressed to M. P. Parish, or to the Publisher of this Journal, 9 Spruce Street.

NEW BOOKS.

THE COMPLETE WORKS OF SHAKSPEARE, ETC. Published by Martin & Johnson, 27 Beekman Street.

We described this elegant quarto edition in our last number, with reference to the first five numbers. We refer to the succeeding numbers only to say that each is very elegantly illustrated. The sixth and succeeding numbers give a representation of Prince Arthur and Hubert, Mistress Ford, Mr. Hackett as Falstaff, (capital,) Miss Julia Dean as Beatrice, Mr. Davenport as Othello, Mrs. Mowatt as Rosalind, Edmund Kean as Gloster, Thomas Hamblin as Coriolanus, Mr. Lester as Prince of Wales, John Drew as Sir Andrew Aguecheek, Mr. and Mrs. Wood as Touchstone and Audrey, and Macready as Shylock. All these are done in excellent style. Seventeen numbers are received. Specimen numbers will be sent by mail, on the receipt of twenty-five cents, (not thirty-one as before stated,) and postage.

THE ROBIN RED-BREAST: a new Juvenile Singing-Book, containing a choice collection of Popular Music, Original and Selected, arranged for one, two, three, or four voices, mostly with Piano Accompaniments; also, a brief, comprehensive course of Instructions in the Elementary Principles of Vocal Music. For the use of Public and Private Schools, Singing Schools, etc. By B. A. RUSSELL and G. W. SANDERS, Authors of the "Young Vocalist," etc. Chicago: S. C. Griggs & Co., 111 Lake Street. New-York: Ivison & Phinney.

This long title is a full description of the book. Being designed for the use of families and schools, and well adapted for such use, it must have an extensive sale.

HARMONY OF THE FOUR GOSPELS, according to the Common Version. Newly arranged, with Explanatory Notes. By EDMUND ROBINSON, D.D., LL.D., Professor. Boston: Crocker & Brewster, 1854.

The reputation of the learned Professor is such as to assure the public that this is a valuable work. It is useful for all, whether learned or unlearned. Such an arrangement adds much to the interest of the historical parts of the gospels, with all readers, and is exactly fitted for Sabbath Schools and Bible Classes.

THE ENGLISHWOMAN IN RUSSIA: Impressions of the Society and Manners of the Russians at Home. By a Lady, ten years' resident in that country. With Illustrations. New-York: Charles Scribner, 1855. 12mo, 316 pages.

We have here a well-written and highly-entertaining account of Russian domestic life. On this subject, we are less "at home" than we are in relation to any country of equal importance on the globe. The author is quite too modest in her preface. She deserves a very prominent place among the successful writers on foreign countries.

ISRAEL POTTER; HIS FIFTY YEARS OF EXILE. By HERMAN MELVILLE, Author of "Typee," etc. Third Edition. New-York: G. P. Putnam & Co., 1855.

This first appeared in Putnam's Magazine, and the readers of that popular journal need not be told that it is capitally done. To others, we say, buy it at the earliest opportunity.

DICKENS' HOUSEHOLD WORDS.

PUTNAM'S MAGAZINE.

These two popular journals retain their high position fully, under the management of the new publishers, Dix & Edwards, 10 Park Place.

List of Patents Issued

FROM APRIL 3, 1855, TO MAY 1, 1855.

Warren Aldrich, Lowell, for improved lathe.

John Andrews, Winchester, Mass, improvement in drills for artesian wells.

Nelson Barlow, Newark, for saw teeth.

Horace Boardman, Plattsburg, improvement on steam-boilers.

Solomon E. Bollers, Rochester, Mass., improved machine for raising and transporting stones.

Lyman Brainard and Levi Newton, Attica, N. Y., improvement in rotary harrows.

Byron Boardman and George G. Sweete, Norwich, Conn., improvement in machinery for winding up lines, twist or cord.

Stephen M. Cate and Edmund Jordan, Waterbury, Conn., improved arrangement of dies and stocks for ornamenting metal tubes.

John Chilcott and Robert Snell, Brooklyn, improvement in boot forms.

Thomas C. Connolly, Washington, improvement in machines for recording votes in legislative bodies.

Jason W. Cory, Crawfordsville, Ind., improvement in seed-planters.

Josiah J. Ducher, New-Haven, improvements in locomotive boilers.

Wright Duryea, New-York, for card-exhibitor.

Benjamin R. Eames, South Newry, Me., improvement in portable door fastener.

Salathel Ellis, New-York, improvement in framing for building concrete walls.

Henry C. Garvin and J. H. King, Hagerstown, for tool for boring hubs.

Moses Thompson, Henrico Co, Va., improvement in furnaces for burning wet fuel.

Charles B. Hutchinson, Auburn, for mode of guiding reciprocating saws.

James H. Jones, Scio, N. Y., improvement in railroad car coupling.

Ferdinand Klein, Newark, improvement in fire-arms.

Alexander B. Latta, Cincinnati, improvement in steam-generators.

Walter Lackey, Worcester, Mass., improvement in straw-cutters.

Robert F. R. Lewis, Annapolis, for spiral wheel for replacing railroad cars upon the track.

W. Loughridge, Weverton, Md., improvement in graduating the tension of car-brakes.

William Loughridge, Weverton, Md., for stationary hydropneumatic engine for extinguishing fire.

John F. Manahan, Lowell, improved machinery for boring wells.

Samuel N. Maxam, Shelburne Falls, Mass., improvement in machine for paring apples.

A. H. Morell, Harlem, improvement in cultivators.

Benjamin T. Norris, Lynn, machine for mortising blinds.

Samuel P. Parham, Trenton, N. J., improved gas-regulator.

J. Rodefer, Cincinnati, improvement in bedstead fastenings.

Ira Rose, Akron, O., improvement in straw-cutters.

Charles Rose, Allentown, Pa., improved Venetian window-blinds.

David Russell, Drewersburgh, Ind., improvement in straw-cutters.

Samuel T. Sharp, Danville, Mo., improvement in straw-cutters.

David M. Smyth, New-York, improvement in platform-balances.

Thomas C. Simonton and Loren J. Wicks, Patterson, N. J., improvement in straw-cutters.

Albert S. Southworth, Boston, plate-holder for cameras.

John and Thomas Sweeney, Birmingham, Pa., improvement in adjustable friction-rollers.

John B. Hall, New-York, apparatus for feeding paper to printing-presses.

William Thomas, Hingham, Mass., improvement in cabin-chairs.

Isaac R. Trimble, Baltimore, improvement in wooden splice-piece for railways.

Hiram Wells, Florence, Mass., device, allowing circular saw-spindles to yield.

C. N. White, Concord, N. C., improved implement for boring the earth.

David E. Paynter, Philadelphia, assignor to Israel M. Bissell, of same place, improved paint-mill.

J. M. Stone, Manchester, N. H., assignor to the Manchester Locomotive Works, improvement in lathes for turning locomotive-drivers.

Charles T. Appleton, Roxbury, Mass., bleaching-apparatus.

W. E. Arnold, Rochester, N. Y., sash-fastener.

H. P. M. Birkbine, Philadelphia, Pa., gas-retorts.

Marshall Barnett and Charles Vanderwoerd, Boston, Mass., machines for punching metals.

Jeremiah Carhart, New-York City, melodeons.

Jarvis Case, Springfield, Ohio, grain and grass harvester.

Alfred Drake, Philadelphia, explosive-gas engines.

Nathan Dresser, Rochester, N. Y., lubricating compounds.

S. B. Ellithorp, Elmira, N. Y., gas-generator in a parlor stove.

James Emerson, Worcester, Mass., ship's windlass.

C. W. Finzel, Bristol, England, process for melting sugar.

C. H. Fonde, Mobile, Ala., dredging-machine.

E. B. Forbus, Buffalo, N. Y., grain and grass harvester.

W. K. Foster, Bangor, Maine, moulds for casting pencil-sharpeners.

De Grasse Fowler and George Fowler, Wallingford, Conn., machines for punching metals.

Isaac Gallup, Mystic Bridge, Conn., for turning the leaves of music-books.

S. W. Hopkins, assignor, &c., &c., Providence, R. I., stud and button-fastenings.

Abraham Masson, Philadelphia, Pa., rotary-engines.

H. K. McClelland, Eldersville, Pa., fountain-pen.

Francis Peabody, Salem, Mass, hay-making machine.

J. B. Shenck, Ansonia, Conn., shut-off valve-gear.

John Simpson, Atlantic, Ga., horse-powers.

Lewis Smith, Buffalo, N. Y., compensation-bearings.

C. A. Thompson, Adrian, Mich., making printers' ink.

W. H. Tawers, Philadelphia, Pa , pen-holder.

J. T Willmarth, Northbridge, Mass., dies for bolt-forging machines.

T. J. Baldwin, Bridgeport, Conn., paper-ruling machine.

S. P. Brooks, Suffolk, Mass., piano-forte action.

W. F. Converse, Harrison, O., india-rubber springs.

M. R. Griswold, Watertown, Conn., arrangement of rollers for making metal tubes.

Felix Manny, Waddams Grove, Ill., hay-press.

Andrew Myers, Philadelphia, Pa., gas cooking-stoves.

C. A. Noyes, Pittsfield, Mass., slide-rest for lathes.

J. T. Pheatt, Toledo, O., life preserving doors.

John Stryker, Six Mile Run, N. J., cultivators.

Philo Sylla, Elgin, Ill., grain and grass harvesters.

John J. Thomas, Manayunk, Pa., rotary-engines.

Chester Van Harn, Springfield, Mass., slide rest for lathes.

William H. Webb, Jr., Chelsea, Mass., metallic hones.

O. W. Bayley, Manchester, N. H., furnace for locomotives.

Henry Chatfield, assignor to, &c., &c., Waterbury, Conn., rakes.

William G Fagiesong, assignor to, &c., &c., Xenia, O., folding-tops for carriages.

William D. Jones, Poughkeepsie, N. Y., assignor to Henry Winfield, N. Y City, propellors.

Rufus Porter, Washington, D. C., and Jonathan D. Bradley, Brattleboro, Vt., assignors to Jonathan D. Bradley, aforesaid, and George Dennison, N. Y. City, elastic tube pump.

E. Harry Smith, assignor, &c., &c., N. Y. City, sewing-machine.

George Nelson, assignor to himself and Nehemiah Hunt, Boston, Mass., cast-iron pavements.

Jesrum Atkins, Chicago, Ill., improvement in platforms of grain-harvesters.

J. W. Corey, Crawfordsville, Ind., spring connecting-rods for washing-machines.

Jonathan Johnson and Joel E. Crane, Lowell, Mass., improvement in stoves.

Norman C. Harris, Poultney, Vt , manufacture of slate-pencils.

Palmer Lancaster, Burr Oak, Mich., implement for shearing sheep.

Isaac B. Livingston and Miles Waterhouse, Barnet, Vt., new method of feeding paper to printing-presses.

J. G. Melville and William Brayshaw, Wetherville, Md., improvement in looms.

William Munroe, Boston, Mass., improved piano-forte action.

Thomas Murgatroyd, Jr., Smithville, Canada West, improvement in carriage-springs

Lucius Page, Cavendish, Vt., combined table and writing-desk.

L. S. Robbins, New-York City, machines for polishing stone.

J. H. Thompson, Patterson, N. Y., machines for planing metal.

Abner Whiteley, Springfield, Ohio, new method of attaching wheels to harvesters.

Abner Whiteley, Springfield, Ohio, improvement in harvesters.

John Comstock, New-London, Ct., assignor to Peter Naylor, of New-York City, improved forge-hammers.

R. L. Hawes, Worcester, Mass., assignor to Robert Rennie, Lodi, N. J., machines for dressing lawns.

W. J. Von Kammerhueber, Washington City, D. C., projectiles.

Abner Whiteley, Springfield, Ohio, arranging shafts and pulleys at an angle.

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WESTERN AMERICAN COOKING-STOVE.

THE undersigned having been constantly engaged in the retail Stove trade since 1828, and having spent much time and money in the invention and structure of Patterns during the last fifteen years, he has now the satisfaction of being able to announce to the Stove Manufacturers and the public that, in November, 1852, he obtained a Patent for a combination of improvements in the Cooking Stove, and that since that time he has been thoroughly testing, improving, and perfecting the Stove containing these improvements. The above cut represents the Stove in its present form, and the undersigned presents it to the public with entire confidence as to its superiority.

The main object of this circular will be to point out the above improvements and the consequent advantages. But it may be proper first to show the prominent defects in the more popular stoves now in use, that the importance of these improvements may be more readily understood. And it may be here asserted, that among the almost endless variety of names to stoves, as well as designs and forms, there are really but two distinct principles in general use. These are distinguished as the high and the low oven; the high oven being located above the fire, and the low oven below. Among the important and unavoidable objections to the low oven, are the following, viz: *First.* The want of heating surface for warming rooms where heat is desired; the top or boiler-plate being the main heating surface. (as heat will not act to any extent upon the outer surface when forced downward under the oven,) while the elevated oven has the same heating surface lower in the room, (consequently much better,) the oven acting as a perfect drum on the top, producing at least double heat with the same fuel, giving this principle a great advantage during the cold season, especially to the agricultural interest, and, in a good degree, to the mechanical. The next objection to the low oven as a wood-stove is, its liability to be affected by the action of pyroligneus acid, which forms upon the under surface of the inside bottom oven-plate. This formation becomes a solid crust on the oven-plate, and can not be separated, except by excessive heat, which can not be applied without taking the stove to pieces, and this crust, when formed to any extent, is a perfect non-conductor of heat, and the oven fails. The third objection is a want of durability, upon the principle that no plate can be sustained long near the fire-chamber without a free action of cold air upon its opposite surface, and the back-plate to the fire-chamber can not have this action without a serious injury to the oven. The fourth objection is increased expense; as the lining to the low oven must be cast-iron, while the lining to the elevated oven should be sheet-iron, which is much less expensive, and in this oven is equally durable. The fifth objection is inconvenience; as the boilers and fire-chamber are too high and the oven too low. The objections to the high oven as generally introduced are—*First*, The great distance from the fire-chamber to the oven, causing a great increase of fuel, and, consequently, great inconvenience from the excessive heat during the warm season, as well as extra expense. The great effort which has been made to overcome these defects is the strongest proof of their existence. The oven has been raised on pipes over the boilers—this was impracticable except for a two-boiler stove; it has been placed back, and the movable plan called the railway adopted. But the want of tightness, the expense of machinery, and liability to get out of order, were the objections. The second fire-chamber back of the main chamber has been tried, but the draft being at one end of the chamber, and no ability to convey it through the chamber, it has been found impracticable and generally abandoned. Many other plans have also been tried, and have been found wanting. The second objection is the want of oven capacity, which has been a serious objection to the larger families, and the remedy has been found extremely difficult. Should the oven be enlarged in width, the stove would be too long, and the amount of fuel would be much increased; if in length, the heat would not act upon the ends, and if in height, the oven would not bake in the middle. These two, it is believed, are the only important objections to the elevated oven; and to avoid these may be imputed the sole cause of the first introduction of the low oven; the high oven, in all other respects, being superior. Now, the object and design of the undersigned's improvements is to entirely remove the objections to the high oven, retaining all its advantages, and, at the same time, possess all the benefits of the low oven, avoiding its defects. And to effect this object, a deep sink is first placed in the fire chamber; this gives extra room for fuel, and is designed for the cold season. A grate is next attached in front, and a bed-plate in rear, sufficiently large to cover the surface of the sink, and resting upon its top; back of

these plates, at the centre of the fire-chamber, a cross-sink is placed, extending back, and in an upward direction to the front of the oven.

This construction brings the fuel near the boilers; the coals are retained on the bed-plate back of the grate; chips or charcoal burn equally well with wood and with the cross-sink wood burns endwise from the front, free to the back, it being raised at the back by the sink, giving a free circulation of air underneath. Two objects are thus effected. The first, a perfect summer arrangement. The second, bringing the fire as near the oven as desired in the most simple and practical manner, without heating but a small part of the front of the stove, and entirely avoiding the unnecessary heat and expense attached to other elevated ovens. For ironing, for the dairy, and other purposes a large boiler-hole is placed over the centre of the fire-chamber, where the sad iron may be heated with chips or charcoal as economically as in the furnace, and the brass kettle or any large vessel may be used. At the back end of this cross-sink an angular division-plate is attached, standing upright. This divides the heat, and causes it to strike the oven near each end. Upon this division-plate rests a curve-plate, the front edge striking the top or boiler-plate just forward of the front of the oven; this plate curves back under the oven near to its centre; thus the heat is carried to the centre of the oven and near each end, and there it first acts upon it. The bottom of the oven being cast-iron and on a line with the top or boiler plate.

The next improvement is, to place internally two ovens the one above the other, both ovens being sheet-iron except the lower bottom-plate; on each side of these ovens a plate called a guard-plate is attached and fitted to the outside plate. These plates extend inwardly midway between the two ovens so far as to force the heat in around them. In this manner the heat divides upon the bottom of the lower oven near each end, passing up and around both sides, and by the guard-plate is carried to the centre between the two ovens; here it divides and passes around the upper oven in the same manner, and out at the collar on the top. Thus it will be seen that the same heat is used doubly over the entire surface of two distinct ovens instead of one, and the most naturally, perfectly, and economically, that it can be applied upon an oven. A stop is also placed upon the oven-head between the two ovens, which, when raised, allows the steam to pass out of the ovens. The effect is, first, to allow meats to be baked in the lower oven as perfectly as in the tin kitchen before the fire-place. Secondly, to allow all kinds of pastry to be baked in the upper oven at the same time as perfectly as in the brick-oven; and as to capacity, the oven on the nine-inch stove bakes nine common pie-tins at once, without changing in any manner, or six loaves of bread. This finishes the improvement in the Cook-Stove.

The undersigned would next present a Stove arranged for the Dining-Room during the cold season. See cut, page 745, of this number.

This stove is arranged on the same general plan of the cook, except that the oven is made single instead of double, and is brought forward and placed over the second tier of boilers. This stove is a fine heater. It requires no more room than the parlor-stove; has four good boilers when the oven is not in use, otherwise two boilers. Has an excellent oven, and its arrangement for broiling, ironing, and cooking is complete, and is much the cheapest stove for its size and capacity in market; altogether, the most durable, and sufficiently ornamented for any sitting-room, and admirably arranged for coal as well as wood, and for the small family as well as the dining-room.

Extensive arrangements have been made with MR. JAMES WAGER, of Troy, for the manufacture and sale of both Stoves and Patterns for the year 1855, and either will be furnished having all the style and finish that the best artists and manufacturers in the city of Troy can produce.

The manufacturers will understand that these are easy stoves to cast, and simple to mount; that, as the principle is Patented, they can have the control for many years; that exclusive Furnace Rights will be given in the sale of Patterns; that, having the Patterns for the Cook-Stove, only a few extra pieces will be required for the Dining-Room. All sizes will be furnished that may be desired.

All communications addressed to MR. JAMES WAGER, of TROY, or to the undersigned, at BROCKPORT, N. Y., will receive prompt attention.

M. CHAPIN SADLER

P. S.—As a proof of the merits of the above improvements, Certificates from those who have tested them by thousands can be furnished, but the following are presumed to be sufficient. The first, with nearly forty names, was signed at an Agricultural Fair held at Rochester, and mostly by strangers to the undersigned, and all within a few hours' time. The others, by the most substantial men engaged in different pursuits.

We, the undersigned, citizens of Monroe County, N. Y., and vicinity, hereby certify that we have had in use, for some time past, the Western American Cooking-Stove, invented by M. C. Sadler, of Brockport; that we consider it decidedly the best stove we have tried, and should much prefer it to any stove we have seen. The oven, we think, is unequalled, being a perfect baker, baking meats, pastry, &c., all at the same time. The boiling arrangement we prefer to any we have noticed, believing that can get more heat with less fuel, and less labor in preparing it. Indeed, this Stove seems to perfect every object designed. It is simple to manage, economical, tasty in appearance, and convenient; and, we believe, the most durable stove in market, and the best adapted to the wants of the farmer, as it does the work in summer without an excessive heat, and is the most pleasant winter stove we have found, giving the most steady and uniform heat, with the least fuel.

GEORGE S. CLOUGH,	LUIS EDMONDS,	JONATHAN BARKER,	J. ASHTON, WHEATL'D,	E. LEE,
THOMAS G. CLAYTON,	E. L. B. CURTIS,	JOHN PROCTOR,	J. N. LINCOLN,	JOHN HOY,
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ORRIN SCOFIELD,	HENRY HUBBARD,	NELSON HATCH,	WM. GOODENOUGH.	W. G. PECK.

M. C. SADLER, ESQ.—DEAR SIR: I take pleasure in certifying that I have one of your No. 6 Western American Cooking-Stoves in use. I have tested it one year, and find it entirely satisfactory. It is extremely simple in arrangement, most perfect in application for all the variety of cookery. I consider the principle altogether superior to the Three-Flue Low-Oven arrangement, (having tested this arrangement before using yours,) as it is much more rapid in its operation, and requires much less fuel.

Yours, &c.,
ELIJAH FOOT, Keeper Boarding-House, Brockport.
THOMAS TALFORD, Inn-Keeper.
SILAS WALBRIDGE, Inn Keeper.

M. C. SADLER, ESQ.—DEAR SIR: In answer to your inquiry as to the merits of your Western American Cooking-Stove, I can freely say, I have used one of your largest size, for nearly one year, and find it all that is desirable for a Cooking-Stove. It has the most perfect oven I have ever found—a stove perfectly simple, durable, economical, and pleasant for cooking; and, I think, particularly adapted to the wants of the farmers, who use their Cooking-Stoves for warming their rooms in winter—as the oven is a drum for this purpose. I have kept public house for a number of years, and am well acquainted with stoves, and consider yours altogether superior to any I have used.

Yours truly,
GARY, Proprietor.

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FOR AMERICAN CITIZENS,

PREPARING FOR SPEEDY PUBLICATION BY

EDWARD WALKER, 114 FULTON STREET, NEW YORK.

A VOICE TO AMERICA;

OR, THE MODEL REPUBLIC, ITS GLORY OR ITS FALL;

WITH A REVIEW OF THE CAUSES OF THE DECLINE AND FAILURE OF THE REPUBLICS OF SOUTH AMERICA, MEXICO, AND OF THE OLD WORLD,

APPLIED TO THE

PRESENT CRISIS IN THE UNITED STATES.

This Work, originally the suggestion of the Publisher, and prepared by able and experienced writers, selected for their eminent fitness for the task, will be made worthy of the earnest perusal of the whole American People; he therefore asks of them their united coöperation in scattering it broadcast over the whole Union. As he anticipates an immense sale for this work, he respectfully requests all Agents to notify him, at least once a month, the number of copies they may have engaged, to enable him to supply all orders according to the date of their receipt. (*To be ready in August.*)

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PROSPECTUS.

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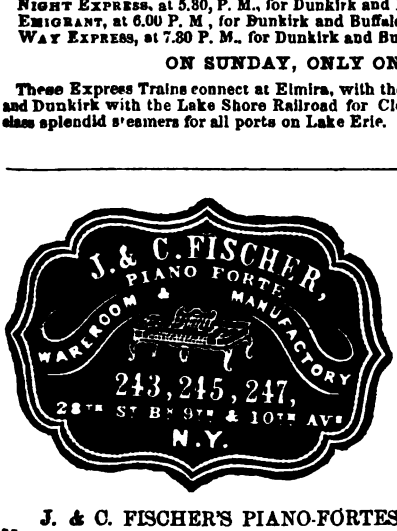

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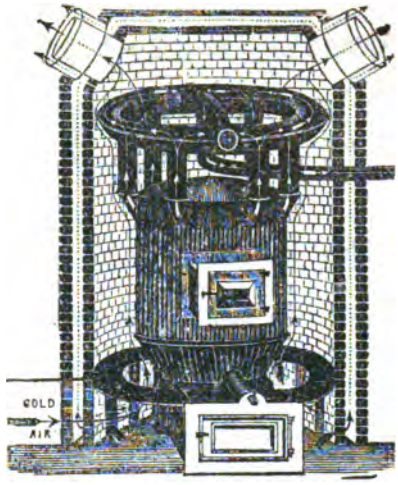

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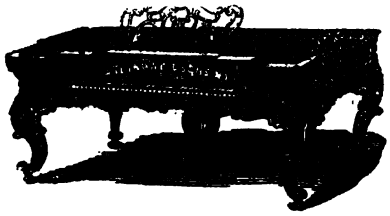

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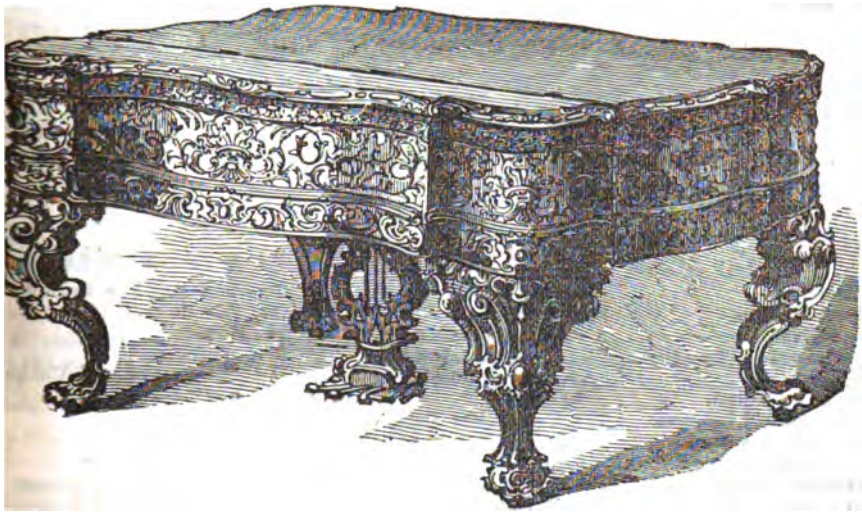

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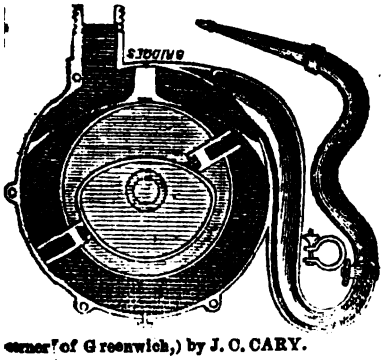

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are always peculiarly susceptible of the inflammatory influences. Over-exertion in warm weather frequently produces those unpleasant and irritating eruptions known as rose-rash, nettle-rash, and prickly-heat, on the face, neck and arms of the most beautiful blonde, and if not promptly attended to, may leave a permanent blemish behind. The cooling, healing, and balmy effect of the PAPHIAN LOTION is truly wonderful in cases of this kind. It does not drive in the eruption, but gives activity to the porous system, and causes the inflammatory principle or virus to exhale by insensible evaporation.

Ladies,

who, while nursing, suffer from sore or inflamed nipples, will find immediate and unfailing relief from the use of the PAPHIAN LOTION, which from its extraordinary power to allay irritation and cool the mouth, may be truly said to render pleasing and painless, both to mother and babe, the most delightful task imposed by maternal duty. It is not, therefore, to be considered one of the mere conventional appendages of the nursery, but as an article of the first necessity in that department, and one that no wise and prudent mother will omit from her list of indispensables for her infant and herself.

Chapped Hands and Lips.

One of the most painful consequences of severe weather to ladies and children, is the chapping or cracking of the skin of the hands. It is a painful and annoying drawback to the amusements of the gay winter season, interfering with the enjoyment of many a sleigh-ride, and marring the pleasure of many a social evening by the excessive irritation which it occasions. Upon chapped, as also upon all roughness and exfoliation of the skin, occasioned by cold, the PAPHIAN LOTION acts like a charm, soothing and healing the inflamed and abraded surfaces, softening the vitiated cuticle, and restoring its flexibility and transparency.

The Nursery.

To pass over in silence the peculiar adaptation of this balsamic fluid to the use of children and the purposes of the nursery would be an act of unkindness to the mothers of our land. As a wash for infants it cannot be too highly recommended. It promotes a healthy tone in the small superficial vessels, so apt to become torpid in infancy, and has a soothing, cooling effect upon the tender and delicate skin. Being not only perfectly innocuous, but eminently hygeian in its nature, it may be used by the most delicate lady, or applied to the most feeble child, with perfect confidence in its harmlessness and salutary effect. It imparts a silky texture to the young and tender skin, and protects it against detriment from external influences.

It is better,

however, to preserve intact the smoothness and beauty of the skin, than to reproduce them after they have been partially destroyed by a low temperature; and as the chapping of the hands may be effectually prevented by the use of the Lotion at the morning and evening toilet, it is desirable that ladies should thus fortify their delicate fingers in advance against the trenchant blasts of winter.

To Gentlemen

who suffer from tenderness and smarting of the face after shaving, PHALON'S PAPHIAN LOTION will prove a most welcome addition to the comforts and luxuries of the toilet; as it alleviates the irritation and pain, and renders the shaven surface soft and pliable.

LETTER FROM JAMES R. CHILTON, Chemist.

I have analyzed the "Paphian Lotion" used for beautifying the complexion, manufactured by Mr Phalon, and find it to be a harmless preparation, and not in any way injurious to the skin.

I believe it will be found serviceable for the purposes it is intended.

JAMES R. CHILTON,
Chemist,
67 Chambers St.

TO EDWARD PHALON, Esq., NEW-YORK, *Dec.* 19, 1853.

LETTER FROM MADAME ANNE THILLON.

TO EDWARD PHALON, Esq.—*Dear Sir*:—If you think my opinion of your "Paphian Lotion" will have any weight with the public, it is, I am sure, very much at your service. I have used the preparation for some months past, and find it infinitely the most efficacious and agreeable cosmetic that has ever graced my toilet.

It unquestionably softens and improves the texture of the skin, and adds to the brilliancy and clearness of the complexion.

I cannot be mistaken on these points, as by its timely application I have repeatedly removed such blemishes as are occasioned by sudden changes of the weather, to which I am particularly sensitive. It is not often that so-called "aids to beauty," advertised to the world as infallible, fulfil even partially their object, but your "Lotion," so far as I am capable of judging, is really what it purports, and I cordially recommend it to all ladies who value a clear, unclouded complexion, or desire to be protected against those annoying affections of the skin, consequent upon the extremes of heat and cold. I am, sir, yours truly,

ANNE THILLON.

METROPOLITAN HOTEL, *Dec.* 31st, 1853.

Manufactured and sold by EDWARD PHALON, at 197 and 517 Broadway (St. Nicholas Hotel). On the receipt of $1, post paid, a bottle will be sent by Express to any part of the United States.

For Sale by all Druggists and Fancy Stores in the United States.

GUNS, PISTOLS, AND CUTLERY.

ALFRED WOODHAM,
160 *FULTON* *STREET*,
ONE DOOR WEST OF BROADWAY, OPPOSITE ST. PAUL'S CHURCH,
NEW-YORK.

SOLE Agent for KLEIN'S PATENT PRIMERS AND CARTRIDGES for PATENT NEEDLE GUNS.

IMPORTER AND DEALER IN GUNS, PISTOLS AND RIFLES.

Is constantly receiving from manufacturers a full assortment of the above articles, together with Wostenholm's and other makers of Bowie, Camp, Sportsmen's and Pocket Knives; Powder Flasks, Shot Pouches, and Belts; French, American and English Percussion Caps, (from all the celebrated makers;) Baldwin's and Ely's Patent Gun Wadding; Sporting Implements, Fishing Tackle, &c.; Colt's Patent and Deringer's celebrated Pistols; French Parlor Pistols, and Caps.

Agent for "PORTER'S" Patent Revolving and Repeating Rifles, and for all kinds of Sporting Ammunition, which, he is offering at very low prices.

☞ Prompt and particular attention given to the filling of orders. Dec.1y.

FARM LANDS FOR SALE,

IN LOTS TO SUIT PURCHASERS.

OVER 2,000,000 OF ACRES OF SELECTED PRAIRIE FARM LANDS,

Belonging to the Illinois Central Railroad Co.

The price will vary from $5 to $25, according to quality, location, &c. The purchase money may be payable in five equal instalments, the first to come due in two years from date of contract, the others annually thereafter—giving six years to pay for the land, with a charge of only TWO PER CENT. PER ANNUM INTEREST. The first two years' interest payable in advance. The Company's construction bonds received as cash. Apply to

CHARLES M. DUPREY, Jr., Land Agent Ill. Cent. R. R. Co.,

No. 84 Lake Street, Chicago, Illinois.

WILLIAM KENYON,

MANUFACTURER OF

STEAM ENGINES,

HAND & SLIDE TURNING LATHES,

Planing, Drilling and Screwing Machines, Shafting and Mill Gearing,

ALL KINDS OF

MACHINISTS' TOOLS, AND SCREWS FOR ROLLING MILLS,

And all other purposes, with

Square or V Thread, Cut to Order.

STEUBENVILLE, O.

Orders for work solicited and promptly attended to. March, '55, *y*

CHARLES DICKENS'

Household Words.

A Journal conducted by Charles Dickens,

Author of the Pickwick Papers, Dombey & Son, Bleak House, Hard Times, Christmas Tales, etc.

THE Subscribers publish monthly a reprint of this excellent periodical.

Besides its distinguished editor, whose name gives warrant of its character, a large and able staff of contributors is regularly engaged upon it: among them William Howitt, Barry Cornwall, Mary Barton, Leigh Hunt, Faraday, the eminent chemist, and others distinguished in Art and Science.

In Household Words has been developed almost a new species of Literature, (so superior have been its articles of this sort to anything of the kind before it); the presentation of Science and Scholarship in a really witty and entertaining manner, without any vagueness or inaccuracy in the information conveyed.

A number of the most popular, healthy and entertaining novels and tales, which have appeared in England in its day, have been first published in Household Words—Cranford, Hard Times, The Christmas Stories, and North and South, have succeeded one another.

Alternately piquant and tender in style, always manly, democratic and humane in purpose, readable, instructive and wholesome, a singular consistency of character pervades all its articles.

It is especially valuable as an index of political, social and philanthropic reform and of popular progress in Great Britain; as instructive of the latest applications of Science to the Trades and Manufactures; as encouraging and training the development of beauty in the Household and in the Mechanic Arts, and as furnishing the best light literature of England, in novels, tales, personal narratives, anecdotes and *jeux d'esprit*.

The subscribers' edition of Household Words is printed with a large clear type on excellent paper. The novels included in Household Words not only appear more promptly but are printed better than in any other form in which they are ordinarily offered to the American public.

DIX & EDWARDS,
10 Park Place, New York.

TERMS:

THREE DOLLARS a year, or TWENTY-FIVE CENTS a number; those remitting THREE DOLLARS will receive the Magazine *free of Postage*. Bound Volumes of Six Months' Parts, ONE DOLLAR AND SEVENTY-FIVE CENTS; Muslin Covers, TWENTY-FIVE CENTS each; Bound Volumes from the commencement of publication supplied to order. Clubs, Two copies, FIVE DOLLARS; Three copies, SIX DOLLARS; Five copies EIGHT DOLLARS AND SEVENTY-FIVE CENTS. PUTNAM'S MONTHLY and HOUSEHOLD WORDS, FIVE DOLLARS.

NEW VOLUMES
OF ALL
THE BRITISH QUARTERLIES,
AND
BLACKWOOD'S MAGAZINE,
Commence about July 1st, 1854.

LEONARD SCOTT & CO.,

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THE LONDON QUARTERLY REVIEW, (Conservative.)

2.
THE EDINBURGH REVIEW, (Whig.)

3.
THE NORTH BRITISH REVIEW, (Free Church.)

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THE WESTMINSTER REVIEW, (Liberal.)

5.
BLACKWOOD'S EDINBURGH MAGAZINE, (Tory.)

The present critical state of European affairs renders these publications unusually interesting. They occupy a middle ground between the hastily-written news items, crud especulations, and flying rumors of the daily journal, and the ponderous tome of the future historian, written after the living interest and excitement of the great political events of the time shall have passed away. It is to these Periodicals that readers must look for the only really intelligible and reliable

HISTORY OF CURRENT EVENTS,

and as such, in addition to their well established literary, scientific and theological character, we urge them upon the consideration of the reading public.

Arrangements are now made for the receipt of early sheets from the British Publishers, by which we shall be able to place *all* our Reprints in the hands of subscribers, about as soon as they can be furnished with the foreign copies. Although this involves a very large outlay on our part, we shall continue to furnish the Periodicals at the same low rates as heretofore, viz:—

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A discount of twenty-five per cent. from the above prices will be allowed to Clubs ordering four or more copies of any one or more of the above works. Thus: Four copies of Blackwood, or of one Review, will be sent to one address for $9; four copies of the four Reviews and Blackwood for $30; and so on.

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Remittances and communications should always be addressed, post-paid, to the Publishers.

LEONARD SCOTT & Co., 54 Gold-street, New-York.

☞ L. S. & Co. have recently published, and have now for sale, the "FARMER'S GUIDE," by Henry Stephens, of Edinburgh, and Prof. Norton, of Yale College, New Haven, complete in two volumes, royal octavo, containing pages, 14 steel, and 600 wood engravings. Price, in muslin binding, $6.

*** *See review of this work in the "Plough, Loom & Anvil," for March*, 1854.

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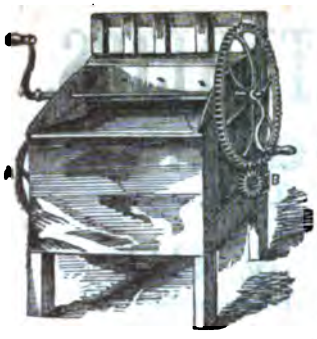

MUMMA'S PREMIUM
CORN SHELLER

PATENTED JUNE 12, 1849.

This sheller is better adapted to the wants of the farmer than any other, as it is simple and durable, not being liable to get out of order, and will shell new or old Corn, large or small ears perfectly clean, separating the cob from the corn. It runs light by hand, or with it a man and boy can shell 130 bushels per day—or two men 225—or with one horse from 400 to 500.

It is also easily converted into an excellent apple and vegetable grinder, which is certainly of great advantage, as it has recently been ascertained by actual experiment, that vegetables, when ground into a pulp, go much further and produce more flesh than when cooked. It is also much safer to feed stock with ground instead of cut vegetables, as the sharp corners when cut, are apt to choke the animal.

This Machine has met with the universal approbation of all classes of men wherever introduced. It was awarded the *first premium*, a heavy SILVER MEDAL, at the State Fair of the Maryland Institute, held in Baltimore, October, 1850.

It also received the *highest premium* at the State Fair of Pennsylvania, in 1851, d at the State Fair of Kentucky, in 1852, and at the State of Michigan in 1853, and at the Agricultural Fair of Frank-Co., Pa., and at the State Fair of Virginia at Richmond, in also, a beautiful SILVER MEDAL at the American In-in New York, in 1853.

The Subscriber having purchased the Patent Right of the above Sheller for all the *United States* and *Territories*, will sell Township, County or State rights, on reasonable terms.

R. ROBINSON.

Greencastle, Franklin Co., Pa., Nov., 1853.

BRIGGS & VICKERE,

MANUFACTURERS OF

ain, Ornamental & Enameled Chamber Furniture,

WHOLESALE AND RETAIL,

NO. 6 Sullivan Street, near Canal, New-York.

In offering, for the patronage of the public, goods of our own make, we feel confident of that success which industry in business and an honesty of purpose, that offers only good and warrantable articles, always merits, simply asking of all who wish to purchase to call and judge for themselves.

GEORGE BRIGGS.
WM. VICKERE.

N.B. Dealers supplied on liberal terms, and orders promptly attended to. Nov., 53.

PREPARED SUPER PHOSPHATE OF LIME,

BY THE UNION CHEMICAL WORKS, L. I.

HOYT & CO., AGENTS,

Nos. 194 Water Street, adjoining the U. S. Hotel, New-York.

A FERTILIZER of the most approved quality, producing all the immediate effect of the best Peruvian Guano, with the advantage of being much more lasting in the soil. Thoroughly tested, and found to more than realize the expectations of all those who have already tried it. The best evidence of this is the largely increased demand this season over the past year. Put up in bags of 160 lbs.; barrels 250 lbs. each. Buyers will please be particular to observe our brand upon each bag or barrel.

Also for sale, American and Foreign Field and Garden Seeds, English Ray Grass, Foul Meadow Grass, fine mixed Lawn Grass, White Clover, Osage, Orange, &c.

Nov., '53, 1 y.

BEAUTIFUL ENAMELLED FURNITURE!

WARREN WARD

lly invites the attention of the trade and the public generally to this new and favorite style of BED-ROOM FURNITURE and finished in Landscape flowers and Scenic patterns, and embellished by gilding in the highest perfection of art. South, it presents many advantages, among which are its non-liability to be affected by atmospheric heat, and its low-ce, costing from $25 to $200 per suit, comprising Dressing Bureau with glass, Bedstead, Wash-hand Stand, Commode, le, Towel Stand, four Chairs and Nurse Rocker.

ng completed his Machinery for the Drying and Manufacturing of his Furniture, he is enabled to offer greater inducements public than any other manufacturer in the city.

B. Furniture delivered free of charge.

No. 144 Grand Street, New-York.
One Block East of Broadway.

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FOR THE SALE OF ALL KINDS OF

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INIST'S TOOLS, LEATHER BELTING, &C.; BROKERS IN DYE-WOODS, DYE-STUFFS AND OILS. ALSO, IMPORTERS AND DEALERS IN EVERY VARIETY OF

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A GREAT VARIETY OF

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SILVER PLATED, PORCELAIN, MINERAL, BRASS, GLASS, &c.

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For French Windows.

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Iron Doors and Chests, made to order.

SILVER PLATING.

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CHAMPION LOCK, Exhibited by A. C. Hobbs, At the World's Fair.

Philadelphia Powder Proof. PATENT.

Clover or Timothy Seed Harvester.

NAPTHA A. WAGNER, inventor and proprietor of the WHEAT HARVESTER, THRESHER and CLEANER, the Clover, Timothy other Grass Seed Harvesters, & the Clover and other Grass Seed Huller and Cleaner, offers to the public this Machine, which is suited, by a change of its parts, to all these kinds of work, and with the aid of one horse and a boy it will harvest from 8 to 12 acres a day, mowing, raking, drawing, breaking, and threshing the heads from the stalks, all at the same time. Warranted, if properly managed.

Rights for States and Counties for sale on favorable terms, lso the right o manufacture the same. Apply by letter to the above, 137 Madison Street, N. Y., and Putney, Steuben County, N. Y.

☞ The Wheat Harvester is also applicable to Barley, Rye Oats, and Rice. Jan. 54tf

PURE BRED SHORT-HORN CATTLE.

HAVING a larger stock than my Farm will properly accommodate, I will part with a few Cows and Heifers. They are from one to there years of age—all sired by the Bates bull "Belvidere", and descended from imported stock. Price $150 to $200 each.

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Apply to Aaron Clement, Agt., South St., above Ninth St., Philadelphia.

Agency for the Purchase and Sale of Improved Breeds of Animals.

CATTLE, SHEEP, SWINE, POULTRY, &c.,

Purchased to order and carefully shipped to any part of the United States, for which a reasonable commission will be charged. The following Stock can be furnished, viz.:

Thorough bred Short Horn and Grade Cattle, Thorough bred Alderney Cattle,
Do. Ayrshire Cattle, Do. Devons do.
Do. South Down Sheep, Do. Cotswold, Oxfordshire or Leicester Sheep,
Swine and Poultry, very fine, of different breeds. Also, Fine, well-broken Devon Working Oxen.

All letters post-paid will be promptly attended to. Address,

AARON CLEMENT,

Feb. 54 tf. **South Street, above 9th Street, Philadelphia.**

McFARLAND'S Improved Fire and Burglar Proof Safes.

THE under signed would respectfully call the attention of the public to the above unequalled safeguard, proof against the devouring element of fire, as well as the most successful burglar.

☞ To Merchants, Jewellers and Bank Directors, we would only say, examine them, and the proofs, and you will be convinced of their superiority over all others manufactured.

Our business is done in a plain straight forward way, without resorting to humbug or large talk.

Below is one of the many testimonials we are daily receiving from all parts of the country, and it speaks for itself. Messrs Pond & Hitchcock's Oil Store was situated directly under the Pearl Street House, and was totally consumed in that great fire of Aug. 23d.

Our depot, where an assortment of all kinds and sizes are constantly on hand, is at 38 MAIDEN LANE,

2 doors from Nassau St., N. Y.

WM. McFARLAND & CO.

NEW YORK, Aug. 23, 1853.

Messrs. McFarland & Co.:

GENTS:—It affords us pleasure to inform you that the Fire and Burglar Proof Safe we purchased of you, preserved our books and papers at the disastrous fire at [illegible] House, last evening, in the most perfect manner. Although it was covered throughout the fire, with burning Rosin and other oils, and directly under a broken gas pipe, in the most intense heat, it remained true to its name, and its contents, when taken out, were not even scorched, and hardly bore the smell of fire. To any one in want of a superior Safe, a perfect safeguard against fire, we cheerfully recommend your manufacture, having had a personal experience of their excellence.

Yours truly,

POND & HITCHCOCK.

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Boston, Mass., No. 14 Blackstone Street.
Baltimore, Md., No. 145 Platt Street
Chicago, Ill., corner South Water and Franklin Sts.
Portland, Oregon, 37 Front Street.
San Francisco, Cal., 27 California Street.
Port Phillip, Australia, 19 West Street.

Agents.—Kendall, Richardson & Co., Bath, Me.; Henry Butler, Bangor, and T. McFarland, Richmond, Me. Jan

SCHOOL FURNITURE,

DESKS,

TABLES,

BOOK-CASES,

SEATS, &c.

The Subscriber requests the attention of Committees, Teachers, and others interested in Schools, to the

IMPROVED DESKS AND CHAIRS,

which he believes will be found well adapted to the purpose for which they are designed, being of the most improved patterns, and for strength and beauty unequalled. The Chair being secured to the floor by an Iron pedestal, as represented in the annexed engraving, and presents the least obstruction in sweeping the room; the back of the Chair continues down to the floor, which greatly diminishes the danger of giving at the part usually the weakest.

The desks are made of Cherry and hard wood, put together in the neatest and most substantial manner, and mounted on ornamental Iron standards, which brace in both directions.

The sizes are graduated to the various ages of pupils, from the child of four years to the student at college.

ALSO, TEACHERS' DESKS AND CHAIRS,

Tables, Chairs with Book Baskets attached for Infant Schools,

BOOK CASES, DRAFT BOARDS, &C.

The facilities for furnishing the best make of furniture are worthy of consideration by those capable of appreciating the skill and ingenuity employed in their manufacture.

Choice and well seasoned materials, steam power, and the most ingenious mechanical contrivances employed, together with workmen experienced in fitting up school rooms, enable him to produce work well calculated to give entire satisfaction.

The high school desk with velvet or cloth tops, with portfolios attached, and various other styles, furnished with promptness and despatch.

R. PATON,

24 Grove treet, New-York.

N. B.—Plans of School Rooms will be furnished, showing the number of Desks required, by sending the size of room.

BANK AND COUNTING HOUSE DESKS MADE TO ORDER.

LAKE'S PATENT FIRE PROOF PAINT.

The original and only article that can be sold without infringing the patent, will at all times be kept, both ground and in Dry Powder, at 119 PEARL STREET, by the Patentee.

The Patent has just been decided in the United States Court to be good and valid.

In consequence of this decision throwing the entire business into my hands, I shall very materially reduce the price, as I can manufacture a large quantity much cheaper, proportionally, than a small one. All infringers will be prosecuted.

ne, 1y. **WM. BLAKE, Patentee, 119 Pearl Street, New-York.**

WRITING TABLES OF NEW CONSTRUCTION.

WALLING & HEDGES, No. 252 Ninth Avenue,

Are now manufacturing and offer for sale a new article in the furniture line, combining the desk, table and chair, unlike anything ever before offered to the public, being, when closed up, a fancy centre table, and when opened, a cushioned arm chair, with desk and writing materials complete, the opening or closing of which requires but one second. This unique piece of furniture must soon come into general use, as it is well adapted to the parlor, the sitting-room, library, office, schoolroom, court-rooms, council chambers, legislative halls, for students, reporters, &c. The examination of the article by a discerning public is particularly solicited. The trade supplied. N. B.—Patent right secured. June, 1y.

S. R. PARKHURST'S

PATENT BURRING MACHINES.

The subscriber, who is the inventor of the

BURRING MACHINES

which are attached to Carding Machines, informs

Woollen and Cotton Manufacturers,

that he has increased facilities for manufacturing superior Burring Machines, and likewise for Second Breakers. In addition to which, manufacturers who prefer the metal cylinder, invented by J. L. Tuttle, may be supplied with them at short notice.

The subscriber is giving his personal attention to the manufacture of these Machines, which he has not done heretofore.

The legal right for building these Machines is in the subscriber.

Orders addressed to HAYES & REDFIELD, No. 90 Beaver Street, will meet with prompt attention.

S. R. PARKHURST.

New York, January 17, 1854. Feb. tf.

WATER WHEELS.

The Subscribers offer for sale "Jagger's Improved French Turbine Water Wheel," which they believe to be unrivalled. Circulars and Tables relating to the same may be obtained at this office, or will be forwarded to any one desiring them.

JAGGER, TREADWELL & PERRY,

Nov. 13-tf. No. 110 Beaver street, Albany, N. Y

ATKINS' SELF-RAKING REAPER.

40 OF these machines were used the last harvest in grass or grain, or both, with almost uniformly good success, in nine different States and Canada.

TWENTY-SIX PREMIUMS,

including TWO *at the Crystal Palace*, (silver and bronze medals,) were awarded it at the autumn exhibitions. I am building only 200, which are being rapidly ordered. Mr. Joseph Hall, Rochester, N. Y., will also build a few.

☞ Early orders necessary to insure a reaper.

Price at Chicago $175—$75 Cash with order, note for $50, payable when reaper works successfully, and another for $50, payable 1st December next, with interest. Or $160 cash in advance.—*Warranted to be a good Self-Raking Reaper.*

☞ Agents, properly recommended wanted, throughout the country. Experienced agents preferred. It is important this year to have the machines widely scattered.

Descriptive circulars with cuts, and giving impartially the difficulties as well as the successes of the reaper, mailed to post-paid applications.

J. S. WRIGHT,

"Prairie Farmer" Warehouse, Chicago, Feb. 1ß

Ammoniated Super-Phosphate of Lime.

This very superior fertilizer, having been fairly tested by farmers and planters, is acknowledged to possess many advantages over Guano. At the same price per ton, and sown in equal quantity, its first effects are equal, if not superior, on most crops, to those of Guano, whilst they last much longer. It may be applied as a top dressing until April with as much benefit as if used at time of sowing. Manufactured and for Sale at the Seed and Agricultural Warehouse of C. B. ROGERS, No. 29 Market Street, Philadelphia. Feb. 1t

ENT & LAVERS,
MANUFACTURERS OF
IRON BEDSTEADS TURNITURE SHUTTERS &C
WROUGHT IRON & CAST IRON RAILING & GRATINGS
122 GRAND ST.
& 311 & 313 MONROE ST.
N.Y.

GLOBE IRON RAILING WORKS,

Nos. 311 & 313 Monroe St.,

NEW-YORK,

Opposite the Allaire Works.

SALES ROOM,

No. 122 GRAND STREET,

Five doors East of Broadway.

The Subscribers having extensive and unsurpassed arrangements for manufacturing every article in their line are now prepared to offer to the public and dealers throughout the country WROUGHT and CAST IRON RAILINGS of every description; Gratings, Shutters, Doors; Portable Iron Bedsteads, plain and ornamental; Cribs and Cradles for Children; Iron Chairs, Settees, Wash Stands, Flower and Work Stands, Umbrella and Hat Stands, &c., &c.; also, a superior quality of of Iron Farm Fence, all of which they will warrant to surpass in strength, durability, beauty of design, and cheapness, the manufactures of any other House in their line. Orders from every section of the United States thankfully received, and executed with the utmost dispatch.

44 ENT & LAVERS, 122 Grand Street, N.Y.

1,000 BOOK AGENTS WANTED,

TO SELL PICTORIAL AND USEFUL WORKS FOR THE YEAR 1854.

$1,000 DOLLARS A YEAR?

WANTED, IN EVERY COUNTY OF THE UNITED STATES, active and enterprising men, to engage in the sale of some of the best Books published in the country. To men of good address, possessing a small capital of from $25 to $100, such inducements will be offered as to enable them to make from $3 to $5 a day profit.

☞ The Books published by us are all useful in their character, extremely popular, and command large sale wherever they are offered. Mar.—3t.

For further particulars address, (postage paid,)

ROBERT SEARS, PUBLISHER.
181 Williams Street, New-York.

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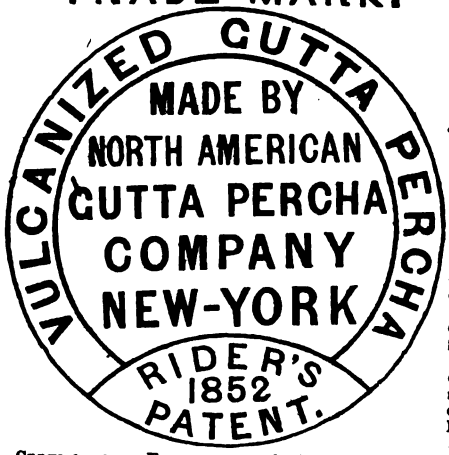

Highest Medal of World's Fair, and Gold Medal of American Institute, awarded for these goods.

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102 Broadway and 1 Pine street,

Where may be found

GUTTA PERCHA GOODS,

IN GREAT VARIETY,

Far superior to any other Water-Proof Goods in the market, comprising many desirable articles for EXPORT, and COUNTRY TRADE, consisting in part of Coats, Cloaks, Capes, Ponchos, Overalls, Leggins, Caps, Sou'westers, Camp Blankets, Horse Covers, Carriage Cloths, Piano-Covers, Fire Buckets, Travelling Bags, Surgical Articles, Steam Packing, and hundreds of other articles.

These Goods are free from unpleasant odor; very tenacious, pliable and elastic; not injured by fatty substances; and unlike India Rubber, will not decompose and become sticky; are cheaper; different from any other Gutta Percha Fabrics made in this country or Europe, and warranted to stand all climates.

CERTIFICATES.—From persons who have tested the goods, may be seen at the store of the Company.
TERMS LIBERAL.—Dealers are invited to examine these goods before purchasing elsewhere.
Orders executed to any amount at short notice.

CAUTION.

BASE IMITATIONS, made of VARNISHED INDIA-RUBBER, are already being offered in the market, therefore purchasers should bear in mind that all genuine goods are stamped with the above trade mark of the Company.

WILLIAM RIDER,
Pres't N. A. G. P. Co.

May, 3t.

CHILSON, RICHARDSON & CO.

AIR WARMING & VENTILATING

WAREHOUSES,

No. 374 Broadway, New York, & Nos. 101 and 103 Blackstone-street, Boston,

MANUFACTURERS AND DEALERS, WHOLESALE AND RETAIL, IN

CHILSON'S WORLD'S FAIR PRIZE MEDAL FURNACES,

Which, after having been subjected for the past five years to the most severe *practical tests*, are now most favorably known and extensively used throughout the United States and Canada; PARTICULARLY APPROVED FOR THE QUALITY OF THE AIR OBTAINED, special provision being made for the supply of a large amount of **PURE WARM AIR**, entirely *free from the effect of contact with* RED HOT IRON.

N. A. BOYNTON'S VENTILATING HEATER;

An entirely New Article, combining STRENGTH and DURABILITY, SIMPLICITY of construction, and ECONOMY in the use of Fuel, with **perfect Efficiency in Operation.** Is entirely of CAST IRON, and so constructed as to *prevent the Escape of Gases and Smoke.* **Four Sizes adapted for Brick Work; Five Sizes of Portables.**

BOYNTON'S VENTILATING WOOD FURNACE;

A NEW AND COMPLETE VETILATING FURNACE, EXPRESSLY DESIGNED FOR BURNING WOOD, adapted to all classes of PUBLIC and PRIVATE BUILDINGS, possessing peculiarities worthy the examination of those who require a FIRST CLASS WOOD FURNACE.

DR. CLARK'S BOSTON SCHOOL STOVES,

FOUR SIZES.

Particularly commended to the attention of **SCHOOL COMMITTEES**, and others in want of an Apparatus **for thoroughly and properly Warming and Ventilating School Rooms and Halls.**

CHILSON'S NEW AND IMPROVED VENTILATING SCHOOL STOVES.

TWO SIZES, FOR WOOD ONLY.

EMERSON'S Patent VENTILATORS of all sizes, and Ventilating Apparatus

IN EVERY VARIETY.

A complete assortment of **Iron, Bronzed, Plated, and Enameled Registers,** including Three Sizes of a New and Improved Pedestal Register; together with all sizes of the

METROPOLITAN COOKING RANGE,

A New and Superior article, embracing all the modern improvements, EQUALLY FITTED FOR THE USE OF ANTHRACITE or BITUMINOUS COAL, COKE, or WOOD. Agents in New York for the sale of

The Peurhyn and Mirror Marble Mantles.

References to parties having our apparatus in use in all parts of the country, with explicit directions for setting the furnaces, and all information necessary for properly warming and ventilating public and private buildings, may be gratuitously obtained by application at either of our Warehouses.

ADAMS & STEVENS'

LAW AND GENERAL AGENCY OFFICE,

WASHINGTON, D. C.

The undersigned (both late of the Post Office Department) have formed a co-partnership for the practice of Law and the prosecution of Claims before the Executive Departments or Congress.

Business of every description requiring personal services will be promptly attended to.

Persons who desire to make contracts with the Government can often obtain valuable information by addressing us.

Having a business connection with JOHN P. SHIELDS, Esq., an enterprising business man and lawyer of long residence in Illinois, we can locate Lands, invest Funds, establish Titles, and collect Claims with great advantage in that rich and rapidly improving section of country.

EXTRA PAY TO OFFICERS, MARINES, AND SAILORS.

By the recent law of Congress, all officers, marines, and sailors of the United States Navy, and officers and men of the Revenue Service, who served in the Pacific, on the coast of California, during the Mexican war, or at any time from 1846 to 1852, are entitled to extra pay. In case of the death of any of the above. the heirs can obtain the same.

EX-POST MASTERS AND MAIL CONTRACTORS

(To whom balances are often due for extra compensation and errors in accounts) can have their business properly and promptly done by addressing us.

INVENTORS AND PATENTEES

May address us upon any business connected with the procurement or the conveyance of Patent Rights.

Address

ADAMS & STEVENS,

May — WASHINGTON, D. C.

AGRICULTURAL WAREHOUSE.

AWARDED FIRST PREMIUM

BY THE

AMERICAN INSTITUTE

In 1846—1848—1849—1850—1852 and 1853,

193 *FRONT STREET, N. Y.*

WHERE may be found a complete assortment of Agricultural Implements, embracing all the new and most approved styles. Ploughs, of every description, among which are

Moore's Celebrated Premium,"

"EAGLE," "PEACOCK," HALL'S STEEL AND BAR-SHARE, "MINOR, HORTON & Co's," "DIAMOND PATTERN," "CENTRE DRAUGHT." &c., &c.

STRAW CUTTERS,—Patent Self Sharpening Straw Cutters, the best article in use; also "Hovey's," "Sinclair's," Greene's," and a variety of other Cutters in general use.

Corn Shellers, Fanning Mills, Horse Powers, Threshing Machines, Corn and Cob Mills, Rakes, Hoes, Shovels, Spades, Hay Forks, Manure Forks, &c., &c.,

GUANO, BONE DUST, PLASTER, SUPER PHOSPHATE OF LIME, &c.

Copper, Brass and Iron Wire Cloth.

All of which will be warranted to be of the best quality and sold at the lowest prices.

JOHN MOORE*, 193 *Front Street.

GWYNNE'S

PATENT REACTION CENTRIFUGAL PUMP AND FIRE ENGINE.

Adapted to any situation; unlimited in power; certain in action; permanent in use; and, withal, so low in cost, that they are rapidly superseding all others. Call and be satisfied of these facts at the office and warehouse of UNION POWER COMPANY of U. S., No. 33 Broadway; removed from No. 24, opposite present stand.

June, tf.

DEMONET & MEYER'S

INFALLIBLE LIQUID HAIR DYE.

THIS is a new article, just presented to the public. The proprietors have made the human hair the study of their m, and having had occasion to use the thousand and one specifics which ignorant charlatans palm upon the public, y are able to judge of their injuriousness. After the invention of the present Dye, they for a long while, content to tify their own customers, made use of it only in their own business; but its merits becoming known, they were ntately compelled to bring it before the public. Here it has been but a short time, yet its success has been precedented. Requests for the appointment of agents for its sale have poured in by every mail, while the orders the article itself have almost exceeded the ability of the proprietors to supply. Its merits may be briefly summed as follows: It is easily applied, and can be used by all without danger, full directions accompanying each bottle. does not color the hair by scorching, like other preparations, but acts upon it by a newly discovered chemical wer. Recent researches show that the hair is triangular, and in its natural state possesses all the powers of the ism. To restore this prismatic virtue is the theory of the Hair Dye. It also gives the fibres their soft and glossy ture, and protects the sacs in which all of them terminate. It does not stain the skin, and is the only compound the kind upon which perfect reliance can be placed, as it never fails in giving a beautiful and natural black or own color to the hair, whiskers or eyebrows.

The proprietors are prepared to furnish it in large or small quantities. Price $1 and $1 50 per bottle, according to e. Liberal deduction to those who buy to sell again.

In answer to the numerous inquiries from every part of the country, Messrs. D. & M. would say that if there be no ent who sells their Dye in the vicinity where the party wishing it resides, by enclosing $1 a bottle will be forwarded. rsons sending requests for the agency of it will please state plainly the place or district in which they wish to pose of it.

DEMONET & MEYERS, Proprietors,

April, '54, tf. No. 18 Courtlandt Street, under the Western Hotel, N.Y. City.

SCRIBNER'S OAK OIL.

This very valuable Family Remedy for the cure of wounds, bruises, cuts, burns, and other diseases of an inflammatory nature, is now regarded as a desideratum in medicine. For inflamed eyes and catarrhal affections this application will be found to be a mild, safe and effectual remedy. For Bleeding Piles there is no application so effectual as the k Oil. Diarrhœa, scurvy, rheumatism and chilblains are speedily relieved by its use. For sale by Druggists generally, and by the Proprietors,

April, '54, tf. DAY & VAN DEUSEN, 114 Chambers Street, New-York.

REMOVAL.

The Office of VAN DEUSEN'S IMPROVED WAHPENE is removed from No. 123 to 114 Chambers St., where the Proprietors, Day & Van Deusen, invite their friends and patrons and the public at large, to call and procure the above celebrated article.

The Wahpene, as is well known to those who have used it, is not a Dye, gotten up to color the hair transiently; but a medical preparation which penetrates the bulb or root of the hair, promoting a healthy action throughout, and restoring it to its natural fullness of growth. Testimonials of its efficacy, in numerous instances, from sources of the highest respectability, may be seen at the Office, No. 114 Chambers Street.

SUPER PHOSPHATE OF LIME,

FROM THE

EAGLE CHEMICAL WORKS,

OF ST TEN ISLAND.

The Subscriber begs leave to inform the Farmers and Gardeners who have left orders for the above Manure, that he is now prepared to deliver the same, either from the Works on Staten Island, or from the Depot in New York.

Other persons requiring supplies of this well known and valuable fertiliser, are requested to make application early, as the demand for this season will be large.

ALFRED F. KEMP, No. 62 Beaver Street, New-York.

MANHATTAN LIFE INSURANCE COMPANY,

146 *BROADWAY, N. Y.*

CASH CAPITAL, $100,000.

DEPOSITED WITH THE COMPTROLLER OF THE STATE FOR THE SECURITY OF ALL POLICY HOLDERS, exclusive of a large and rapidly augmenting Premium Fund.

Persons insuring with this Company, will be entitled to their pro rata share of the first declared dividend. The rates and principles adopted have stood the test of experience, and must secure, beyond contingency, the object for which Life Insurance is effected,—immediate and permanent aid to the Widow and Orphan.

A. A. ALVORD, *President.*

C. Y. WIMPLE, *Secretary.* N. D. MORGAN, *Actuary.*

ABRAM DU BOIS, M.D., *Medical Examiner,* attends at the office daily, from 2 to 3 o'clock P.M.

Prospectuses to be had at the office gratis May, 4t.

WHEELER & WILSON MANUFACTURING COMPANY'S

SEWING MACHINE,

MANUFACTURED AT WATERTOWN, CONN.

OFFICE, 265 BROADWAY, NEW YORK.

A. B. WILSON'S PATENT,

(*August* 12, 1851,)

AND JUNE 15, 1852.

AGENCIES AT

68 COURT ST., BOSTON,

172 CHESTNUT ST., PHILAD'PHIA,

IRON HALL, WASHINGTON.

These Machines have been in successful operation, in the hands of manufacturers and families, for the past two years, and in every case have given universal satisfaction. The Proprietors are now prepared to offer them to the public, with that increased confidence in their merits which the united testimony of their numerous customers has strengthened and confirmed.

These Machines are entirely different from any other, the principles on which they are made being *exclusively* our own.

Among the advantages of this Machine over any others are the following:—

1. The simplicity of its construction, and the ease with which it can be kept in the most perfect order.

2. The perfect manner with which the operator is enabled to stitch and sew the various kinds of work, from the finest linen to the coarsest cloths.

3. It particularly excels in the rapidity with which work can be executed; in that respect it has no equal.

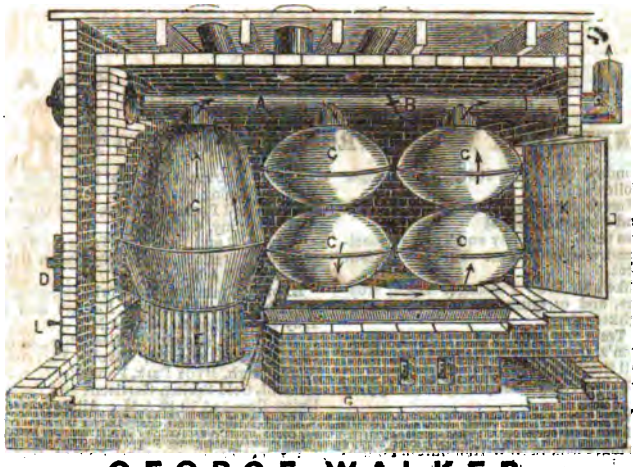
4. The little *power* required to propel them, enabling even those of the most delicate constitution to use them without injury to their health.

We are now manufacturing a larger sized Machine, more particularly adapted to the sewing of leather, canvas bags, and the heavier kinds of cloths.

An examination of our Machines is respectfully solicited at our Office, 265 Broadway.

Feb. 1y.

Walker's Patent



Warming Furnace.

GEORGE WALKER,

WARMING AND VENTILATING WAREHOUSE,

No. 83 WHITE STREET,

NEAR BROADWAY, N. Y.

PATENT MIRROR MANTELS,

Emerson's Patent Corresponding Ship Ventilators,

EMERSON'S PATENT HOUSE AND CAR VENTILATORS,

POND'S IMPROVED COOKING RANGE. Dec. 1y.

FALL OF 1858.

GREAT CENTRAL THROUGH LINE TO THE WEST!

☞ CARRYING THE GREAT WESTERN MAIL.

BALTIMORE AND OHIO RAILROAD,

From Baltimore to Wheeling, through in 18 hours!

Tunnels all completed, and Road in fine order.

THE EXPRESS MAIL TRAIN leaves Baltimore at 7 P. M. daily, on arrival of the 9 A. M. Train from New York, and proceeds directly through,—or Passengers leaving New York at 5 30 P. M., and Baltimore at 8 A. M., may lodge in Cumberland, and proceed thence in the morning to *Wheeling, where they arrive at* 1 P. M.

Baggage checked through to Wheeling, and NO CHARGE *for Transfer of Passengers or Baggage.*

☞ Passengers will not fail to observe that this is THE CHEAPEST, as well as one of the most pleasant routes to the West.

FARE BY THROUGH TICKET,

BY RIVER FROM WHEELING, WITH THE RIGHT TO LIE OVER ON THE ROUTE.

From New York to Cincinnati	- -	$18 50	To Louisville,	- - - -	$14 50
Philadelphia to	do. - - -	11 00	To	do. - - - -	12 00
Baltimore to	do. - - -	10 00	To	do. - - - -	11 00
Washington to	do. - - -	11 00	To	do. - - - -	12 00

With an additional charge on board of the Boats for *Meals and State Rooms* of only $2 to Cincinnati—$3 to Louisville.

BY LAND ROUTE FROM WHEELING, &c.

From New York to Columbus,	- - -	$15 62	To Cincinnati,	- - - -	$18 62
Philadelphia to	do. - - -	13 30	To	do. - - - -	16 30
Baltimore to	do. - - -	12 30	To	do. - - - -	15 00
Washington to	do. - - -	13 00	To	do. - - - -	16 00

For THROUGH TICKETS and general information apply at the following places:

At NEW YORK, to J. L. SLEMMER, *cor. Park Place and Broadway, opposite the Park and one block above the Astor House.*
At PHILADELPHIA, to MR. BLACKWELL, *Library St.*, or to the TICKET SELLER at Balt. R. R. Station, *Broad & Prime Sts*
At BALTIMORE, to J. T. ENGLAND, *at Baltimore and Ohio Railroad Station.*
At WASHINGTON, to T. H. PARSONS, *Agent at Railroad Station.*

WASHINGTON BRANCH.

54

LEAVE BALTIMORE at - - - -	4 15 A. M.	LEAVE WASHINGTON, for Balt. at -	6 A. M.
Do. do. - - - - -	9 A. M.	Do. do. do. - -	8 A. M.
Do. do. - - - - -	3 30 P. M.	Do. do. do. - -	3½ P. M.
Do. do. - - - - -	7 P. M.	Do. do. do. - -	5 P. M.
On Sunday at - - - - -	4 15 A. M.	*On Sunday* at - -	6 A. M.
Do. - - - - -	6 10 P. M.	Do. - -	5 P. M.

The FIRST and FOURTH Trains from Baltimore, and the SECOND and FOURTH Trains from Washington, will be Express Mail Trains—stopping only at Washington Junction and Annapolis.

HUDSON RIVER RAILROAD.

SUMMER ARRANGEMENT.

NEW-YORK TO AND FROM ALBANY AND TROY.

On and after Monday, May 29th, 1854, the Passenger Trains will run as follows:

GOING NORTH.—Leave New-York from the office cor. Chambers Street and College Place, at

6.00 A.M. Express train for Albany and Troy, connecting with northern and western trains. Through in four hours from 31st street.

7.00 A.M. Poughkeepsie Way Passenger Train, stopping at all Stations, and carrying the Way Mail from New-York to Poughkeepsie.

9.00 A.M. Mail Train for Albany and Troy, stopping at Peekskill, Garrison's, Cold Spring, Fishkill, New-Hamburg, and at all Mail Stations north of Poughkeepsie.

10.00 A.M. Peekskill Way Passenger Train, stopping at all stations.

12.00 M. Way Train for Albany and Troy, stopping at Yonkers, Tarrytown, Sing Sing, Crugers, Peekskill, Garrison's, Cold Spring, Fishkill, New-Hamburgh, Poughkeepsie, Hyde-Park, Rhinebeck, Tivoli, Oakhill, Hudson, Stuyvesant, and Castleton, and connecting with the Express Train leaving Albany at 6.30 P.M. for Buffalo, and at Troy with northern Trains for Montreal.

1.00 P.M. Poughkeepsie Freight and Passenger Train, stopping at all Stations.

3.00 P.M. Peekskill Way Passenger Train, stopping at all Stations.

4.00 P.M. Express Train to Albany and Troy, stopping at Sing Sing, Peekskill, Cold Spring, Fishkill, Poughkeepsie, Rhinebeck, Hudson, connecting at Albany with Western Express Train at 10.30 P.M. for Buffalo.

4.15 P.M. To Poughkeepsie, stopping at all Way Stations.

5.00 P.M. Way Train for Albany and Troy, stopping at Tarrytown, Peekskill, Garrison's, Fishkill, Poughkeepsie and stations north on signal, and connecting at Albany at 10.30 P.M. for Buffalo.

5.30 P.M. To Peekskill, stopping at all Way Stations.

6.30 P.M. Emigrant and Freight Train for Albany and Troy, stopping at all Time Table Stations.

7.45 P.M. From 31st Street, Through Freight Train for Albany and Troy.

11.00 P.M. To Tarrytown, stopping at all Way Stations.

4.30 A.M. Leave Poughkeepsie for Albany, Way Freight and Passenger Train, stopping at all Stations.

GOING SOUTH.—Express Passenger Train for New-York, stopping at Hudson, Rhinebeck, Poughkeepsie, Fishkill, and Peekskill, leave Troy Union Depot at 4.30 A.M.; Albany, 4.45 A.M.

Way Mail and Passenger Train for New-York, stopping at all Mail Stations, leave Troy Union Depot at 5.30 A.M.; Albany, 6.00 A.M.

Express Train for New-York, stopping only at Hudson, Rhinebeck, Poughkeepsie, Fishkill and Peekskill, leave Troy Union Depot at 8.30 A.M.; Albany, 8.45 A.M.

Way Train, stopping at Castleton, Stuyvesant, Coxackie, Hudson, Oakhill, Tivoli, Barrytown, Rhinebeck, Staatsburgh, Hyde Park, Poughkeepsie, New-Hamburgh, Fishkill, Cold Spring, Garrisons and Peekskill, leave Troy Union Depot at 10.50 A.M.; Albany, 11.00 A.M.

Way Freight and Passenger Train for Poughkeepsie, stopping at all Stations, leave Albany at 1.45 P.M.

Express Train, stopping only at Hudson, Rhinebeck, Poughkeepsie, Fishkill, Cold Spring, and Peekskill, leave Troy Union Depot at 4.35 P.M.; Albany, 4.45 P.M.

Milk, Freight and Passenger Train, stopping at all Stations on signal, leave Albany at 5 30 P.M.

From East Albany, Through Freight Train, leave Albany at 7.00 P.M.

Leave Poughkeepsie for New-York at

4.30 A.M. Way Freight Train, stopping at all Stations.

6.15 A.M. Way Passenger Train, stopping at Time Table Stations, except Manhattan.

4.00 P.M. Way Passenger Train, stopping at all Stations.

Leave Peekskill for New-York at

6.30 A.M. Way Passenger Train.

3.30 P.M. Way Passenger Train.

8.30 P.M. Way Passenger Train.

Leave Sing Sing for New-York at

6.00 A.M. Stopping at all Way Stations.

Passengers are requested to procure Tickets before entering the cars. Tickets purchased in the cars will be five cents extra. Trains will stop a sufficient time at Poughkeepsie for refreshments.

Freight forwarded to the West and North, as expeditiously, safely and cheaply, as by any other Line.

New-York, Monday, May 29, 1854.

New York and New Haven Railroad.

SUMMER ARRANGEMENT—1854. COMMENCING MAY 15, 1854.

TRAINS FROM NEW YORK.

For New Haven—Accommodation—At 7 and 11 30 A. M. and 4 10 and 5 15 P. M. The 4 P. M. train is Express to Greenwich.

Express—At 8 A. M., 3 and 4 P. M. The 8 A. M. train stops at Stamford and Bridgeport; the 3 P. M. at Stamford, Norwalk and Bridgeport; the 4 P. M. at Stamford.

For Port Chester and Norwalk—Special Accommodation Trains—At 8 45 A. M. & 6 30 P. M. for Norwalk, & 1 30 P.M. & 4 30 P. M. for Port Chester.

For Boston, via Hartford, Springfield & Worcester—Express—At 8 A. M. and 4 P. M. Dine and sup at Springfield.

For Connecticut River, Vermont Railroads, and Montreal—Express—At 8 A. M. Dine at Springfield.

For Accommodation Trains of the New Haven, Hartford and Springfield Railroads—At 11 30 A. M. & 3 P. M.

For Canal R. R.—At 8 A. M. and 11 30 A. M.

For New Haven and New London Railroad—Express at 8 A. M. to New London, Norwich, Stonington and Providence, and 3 P. M. to New London only.

For Housatonic R. R.—Express—At 8 A. M.

For Naugatuck R. R.—Express—At 8 A.M. and 3 P.M.

For Danbury and Norwalk R. R.—Accommodation—At 7 and 8 45 A. M., and Express at 4 10 P. M.

TRAINS TO NEW YORK.

From New Haven—Accommodation—At 5 30, 6 45 and 10 15 A. M. and 4 30 P. M.

Express—At 9 35 A. M. and 1 10, 1 50, & 9 25 P. M.

From Norwalk and Port Chester—Special Accommodation Trains from Norwalk, at 6 A. M.; from Port Chester, at 5 30 A. M., and 3 50 P. M.

See large bill of advertisement at the Station Houses and Hotels.

GEO. W. WHISTLER, Jr., Superintendent.

Vice Pres't. and Supt.'s Office, 37 Canal Street, N. Y

Ass't Supt.'s Office, Station House, New Haven.

NEW YORK AND ERIE RAILROAD.

PASSENGER TRAINS LEAVE PIER FOOT OF DUANE-ST., AS FOLLOWS:

Trains leave Pier foot of Duane St., as follows, viz:

Buffalo Expres, at 6 A. M. for Buffalo direct, without change of baggage or cars.

Dunkirk Express at 7 A. M., for Dunkirk.

Mail at 8 15 A. M. for Dunkirk and Buffalo, and intermediate stations.

Way Express at 12 45 P. M. for Dunkirk.

Rockland, Passenger, at 3 P. M. (from foot of Chambers-st.,) via Piermont for Suffern and intermediate stations.

Way Passenger, at 4 P. M. for Otisville and intermediate stations.

Night Express at 5 P. M. for Dunkirk and Buffalo.

Emigrant Train at 6 P. M.

On SUNDAY only one Express Train, at 6 P. M.

These Express Trains connect at Buffalo with first-class splendid steamers on Lake Erie for all ports on the Lake; and at Dunkirk with the Lake Shore Railroad for Cleveland, Cincinnati, Toledo, Detroit, Chicago, &c.

D. C. McCALLUM, General Superintendent.

DAVID LANDRETH'S
AGRICULTURAL AND HORTICULTURAL
IMPLEMENT AND SEED WAREHOUSE.

Removed to No. 23 SOUTH SIXTH STREET, between CHESTNUT and MARKET Sts.

THE SUBSCRIBER OFFERS FOR SALE AN EXTENSIVE ASSORTMENT OF

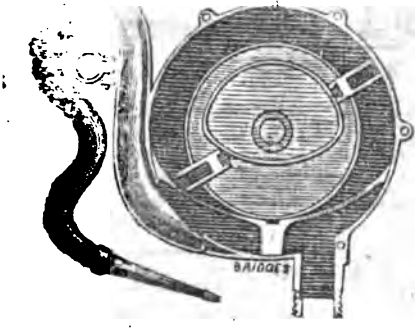
AGRICULTURAL IMPLEMENTS,
HORTICULTURAL TOOLS,
GARDEN, GRASS, FIELD AND FLOWER SEEDS.

AGRICULTURAL AND HORTICULTURAL,
RURAL AND BOTANICAL PUBLICATIONS.

Implement and Seed Catalogues, Landreth's Rural Register and Almanac, furnished gratis upon personal or pre-paid application.

Oct. '58, 3m. 2572. **D. LANDRETH, Philadelphia.**

A. W. CARY'S ROTARY FIRE-ENGINE PUMPS.



THE Inventor, after thoroughly testing this engine pump, for the past two years,) feels confident that it is not equalled by any thing now in market, in the way of raising or forcing water: the motion being rotary, the stream is constant, without the aid of an AIR vessel. The packing is self-adjusting, very durable, and cannot well get out of order.

These pumps are well calculated for all the purposes for which pumps or hydrants may be used, viz., Factories, Steamboats, Tanneries, Breweries, Distilleries, Railroads, Water Static Hotels, Mines, Garden Engines, &c.

Among the many testimonials given of this pump, is a [illegible] medal awarded at the last great Fair of the American Institu

No. 1 is a house or well pump and domestic Fire Engine, a will raise from 20 to 30 gallons per minute.

No. 2 will raise 100 gallons at 130 revolutions.
No. 2½ " 200 " 120 "
No. 3 " 300 " 190 "

The quantity raised can be doubled, by doubling the revolutions. These machines are manufactured and sold by the subscribers at Brockport, N. Y., also in this city, 48 Courtland street (corner of Greenwich,) by J. C. CARY.

Sept. 18–1y. CARY & BRAINERD.

ENAMELED FURNITURE.

The Subscriber invites the attention of those about furnishing with this elegant and fashionable style of *Chamber Furniture*, to his stock, manufactured from the best of materials and by the most experienced and faithful workmen, under his own supervision.

Suites consisting of Bureau with Glass, Wash-stand, Table, Bedstead, and 4 Cane seat Chairs, are offered as low as $25. With marble tops as low as $45 the suit and upwards, with the addition of Commode and Rocker to $150 the set, price varying according to style and expense of finish. Every article warranted.

Hotel and Boarding House Keepers will find this the cheapest and best place to get this style of *Furniture* as we manufacture nothing but the Enameled.

Orders from a distance promptly attended to, and goods carefully packed.

S. H. WARWICK,
No. 62 WHITE STREET,
Three doors West of Broadway, N. Y. Dec. 1y.

PORTRAITS.

The Subscriber, from a long and steady practice in the art of, as well as by her success in, portraying upon canvas the

LIFE LIKENESS OR PORTRAIT OF THE SITTER,

Now feels warranted in inviting those who are wanting for themselves or their friends, a well-finished and lasting likeness, to call at her Rooms, 193 BLEECKER STREET, where Specimens of Art, in various styles, may be seen. Terms Reasonable.

MRS. LILLY M. SPENCER,
193 Bleecker Street, N. Y.

Dec. tf

PATENTS, INVENTIONS, & DRAWINGS.

J. H. BAILEY, Agent for the procuring and sale of Patent Rights for this country, Great Britain and the Continent

MECHANICAL DRAWINGS.

Mechanical and Architectural Drawings executed in all kinds of Perspective, with dispatch and at moderate prices. 66, Tryon Row, No 5, opposite City Hall. May 29—tf

A NEW WORK.

On the First of April the First Number of the.

UNITED STATES MAGAZINE.

It is to be issued monthly, in a large quarto form, and devoted to Science, Art, Literature, Agricultu Commerce, Inventions, in short whatever shall be found most useful, instructive and interesting to the gr ody of intelligent American people. Each number will be beautifully illustrated with Engravings on t paper

TERMS, ONE COPY FOR ONE YEAR, - - - - - - - $1 00
FOUR " " " " - - - - - - - 3 00

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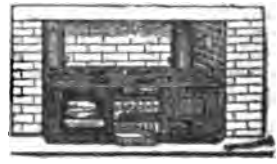

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Oct., '53.

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Mechanics, Manufacturers, Artists, Inventors and others in the State of Maryland, as well as the country at large, are respectfully invited to avail themselves of the opportunity thus afforded to display their taste and skill in the collection about to be made.

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The Board of Managers earnestly invite the active co-operation of the Mechanics and Industrial Classes throughout the Country in contributing to the important object they have in view.

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Freckles, Tan, Pimples, Chapped Hands, Lips, and Face, Blotches, Sun Burns, Scalds, Burns, etc. and all Diseases appertaining to the Skin.

Phalon's Paphian Lotion.

The most brilliant addition to the toilet which the present age has witnessed, was the fortunate discovery of a distinguished physician and Orientalist, who obtained the knowledge of its ingredients, and the method of combining them, while traveling in India. The receipt or secret was purchased for $2,500 by EDWARD PHALON, who, in the course of a long series of experiments, has so enriched, improved, and perfected the preparation, as to insure its reception as an indispensable and unequaled article for the toilet throughout the civilized world.

To describe,

or even to enumerate, all the instances in which this peerless beautifier may be recommended as an unfailing specific, would occupy a volume; suffice it to state, that among its most important properties, is the power to improve a harsh, pallid, bronzed, mottled, or otherwise repulsive COMPLEXION, and to substitute the fascination of a delicate and dazzling white, alternating with a roseate bloom. Perhaps the blush that beautifies the inner surface of an ocean shell, will give the best idea of the rich transparent tint which it imparts to the cheeks, while no pearl can surpass the exquisite fairness which it confers upon the neck, hands, and arms.

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in counteracting all injurious effects arising from exposure to the weather and change of climate, would be deemed incredible if it were not authenticated by the highest testimony. Neither the freezing blast of the north, nor the blazing heat of the south can destroy or impair the beauty of a complexion protected by the regular application of the PAPHIAN LOTION.

Fair Complexions

are always peculiarly susceptible of inflammatory influences. Over exertion in warm weather frequently produces those unpleasant and irritating eruptions known as rose-rash, nettle-rash, and prickly heat, on the face, neck, and arms of the most beautiful blonde, and if not promptly attended to, may leave a permanent blemish behind. The cooling, healing, and balmy effect of the PAPHIAN LOTION is truly wonderful in cases of this kind. It does not drive in the eruption, but gives activity to the porous system, and causes the inflammatory principle or virus to exhale by insensible evaporation.

Ladies,

who, while nursing, suffer from sore or inflamed nipples, will find immediate and unfailing relief from the use of the PAPHIAN LOTION, which, from its extraordinary power to allay irritation and cool the mouth, may be truly said to render pleasing and painless, both to mother and babe, the most delightful task imposed by maternal duty. It is not, therefore, to be considered one of the mere conventional appendages of the nursery, but as an article of the first necessity in that department, and one that no wise and prudent mother will omit from her list of indispensables for her infant and herself.

Chapped Hands and Lips.

One of the most painful consequences of severe weather to ladies and children, is the chapping or cracking of the skin of the hands. It is a painful and annoying check to the amusements of the gay winter season, interfering with the enjoyment of many a sleigh-ride, marring the pleasure of many a social evening by excessive irritation which it occasions. Upon chapped, as also upon all roughness and exfoliations of the skin, occasioned by cold, the PAPHIAN LOTION acts like a charm, soothing and healing the inflamed and abraded surfaces, softening the indurated cuticle, and restoring its flexibility and transparency.

The Nursery.

To pass over in silence the peculiar adaptation of this balsamic fluid to the use of children and the purposes of the nursery, would be an act of unkindness to the mothers of our land. As a wash for infants, it cannot be too highly recommended. It promotes a healthy tone in the minute superficial vessels, so apt to become torpid in infancy; and has a soothing, cooling effect upon the tender and sensitive skin. Being not only perfectly innocuous, but eminently hygeian in its nature, it may be used by the most delicate lady, or applied to the most feeble child, with perfect confidence in its harmlessness and salutary effect. It imparts a silky texture to the young and tender skin, and protects it against detriment from external influences.

It is better,

however, to preserve intact the smoothness and beauty of the skin, than to reproduce them after they have been partially destroyed by a low temperature; and as the chapping of the hands may be effectually prevented by the use of the Lotion at the morning and evening toilet, it is desirable that ladies should thus fortify their delicate fingers in advance against the trenchant blasts of winter.

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who suffer from tenderness and smarting of the face after shaving, PHALON'S PAPHIAN LOTION will prove a most welcome addition to the comforts and luxuries of the toilet; as it alleviates the irritation and pain, and renders the shaven surface soft and pliable.

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I have analyzed the "Paphian Lotion" used for beautifying the complexion, manufactured by Mr. Phalon, and find it to be a harmless preparation, and not in any way injurious to the skin.

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To EDWARD PHALON, Esq. } Chemist,
New-York, Dec. 19th, 1853. } 87 Chambers st.

LETTER FROM MADAME ANNE THILLON.

To EDWARD PHALON, Esq.—*Dear Sir:*—If you think my opinion of your "Paphian Lotion" will have any weight with the public, it is I am sure, very much at your service. I have used the prepartion for some months past, and find it infinitely the most efficacious and agreeable cosmetic that ever graced my toilet.

It unquestionbly softens and improves the texture of the skin, and adds to the brilliancy and clearness of the complexion.

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Metropolitan Hotel, Dec. 5, 1853.

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EASTERN

AMERICAN

COOKING-STOVE.

The undersigned having been constantly engaged in the retail Stove trade since 1828, and having spent much time and money in the invention and structure of Patterns during the last fifteen years, he has now the satisfaction of being able to announce to the Stove Manufacturers and the public that, in November, 1852, he obtained a Patent for a combination of improvements in the Cooking Stove, and that since that time he has been thoroughly testing, improving, and perfecting the Stove containing these improvements. The above cut represents the Stove in its present form, and the undersigned presents it to the public with entire confidence as to its superiority.

The main object of this circular will be to point out the above improvements and the consequent advantages. But it may be proper first to show the prominent defects in the more popular stoves now in use, that the importance of these improvements may be more readily understood. And it may be here asserted, that among the almost endless variety of names to stoves, as well as designs and forms, there are really but two distinct principles in general use. These are distinguished as the high and the low oven; the high oven being located above the fire, and the low oven below. Among the important and unavoidable objections to the low oven, are the following, viz: *First.* The want of heating surface for warming rooms where heat is desired; the top or boiler-plate being the main heating surface, as heat will not act to any extent upon the outer surface when forced downward under the oven,) while the elevated oven has the same heating surface lower in the room, (consequently much better,) the oven acting as a perfect drum on the top, producing at least double heat with the same fuel, giving this principle a great advantage during the cold season, especially to the agricultural interest, and, in a good degree, to the mechanical. The next objection to the low oven as a wood-stove is, its liability to be affected by the action of pyroligneus acid, which forms upon the under surface of the inside bottom oven-plate. This formation becomes a solid crust on the oven-plate, and can not be separated, except by excessive heat, which can not be applied without taking the stove to pieces, and this crust, when formed to any extent, is a perfect non-conductor of heat, and the oven fails. The third objection is a want of durability, upon the principle that no plate can be sustained long near the fire-chamber without a free action of cold air upon its opposite surface, and the back-plate to the fire-chamber can not have this action without a serious injury to the oven. The fourth objection is increased expense; as the lining to the low oven must be cast-iron, while the lining to the elevated oven should be sheet-iron, which is much less expensive, and in this oven is equally durable. The fifth objection is inconvenience; as the boilers and fire-chamber are too high and the oven too low. The objections to the high oven as generally introduced are—*First*, The great distance from the fire-chamber to the oven, causing a great increase of fuel, and, consequently, great inconvenience from the excessive heat during the warm season, as well as extra expense. The great effort which has been made to overcome these defects is the strongest proof of their existence. The oven has been raised on pipes over the boilers—this was impracticable except for a two-boiler stove; it has been placed back, and the movable plan called the railway adopted. But the want of tightness, the expense of machinery, and liability to get out of order, were the objections. The second fire-chamber back of the main chamber has been tried, but the draft being at one end of the chamber, and no ability to convey it through the chamber, it has been found impracticable and generally abandoned. Many other plans have also been tried, and have been found wanting. The second objection is the want of oven capacity, which has been a serious objection to the large families, and the remedy has been found extremely difficult. Should the oven be enlarged in width, the stove would be too long, and the amount of fuel would be much increased; if in length, the heat would not act upon the end if in height, the oven would not bake in the middle. These two, it is believed, are the only important objections to the elevated oven; and to avoid these may be imputed the sole cause of the first introduction of the low oven; the high oven, in all other respects, being superior. Now, the object and design of the undersigned's improvements is to entirely remove the objections to the high oven, retaining all its advantages, and, at the same time, possessing all the benefits of the low oven, avoiding its defects. And to effect this object, a deep sink is first placed in the chamber; this gives extra room for fuel, and is designed for the cold season. A grate is next attached in front to a bed-plate in rear, sufficiently large to cover the surface of the sink, and resting upon its top; back of

these plates, at the centre of the fire-chamber, a cross-sink is placed, extending back, and is an upward to the front of the oven.

This construction brings the fuel near the boilers; the coals are retained on the bed-plate back of the or charcoal burn equally well with wood and with the cross-sink wood burns endwise from the front to back, it being raised at the back by the sink, giving a free circulation of air underneath. Two objects are thus The first, a perfect summer arrangement. The second, bringing the fire as near the oven as desired in the ple and practical manner, without heating but a small part of the front of the stove, and entirely avoiding the cessary heat and expense attached to other elevated ovens. For ironing, for the dairy, and other purposes boiler-hole is placed over the centre of the fire-chamber, where the sad iron may be heated with chips or economically as in the furnace, and the brass kettle or any large vessel may be used. At the back end of the sink an angular division-plate is attached, standing upright. This divides the heat, and causes it to strike near each end. Upon this division-plate rests a curve-plate, the front edge striking the top or boiler-plate ward of the front of the oven; this plate curves back under the oven near to its centre; thus the heat is the centre of the oven and near each end, and there it first acts upon it. The bottom of the oven being cast on a line with the top or boiler plate.

The next improvement is, to place internally two ovens the one above the other, both ovens being cept the lower bottom-plate; on each side of these ovens a plate called a guard-plate is attached and outside plate. These plates extend inwardly midway between the two ovens so far as to force the heat them. In this manner the heat divides upon the bottom of the lower oven near each end, passing up and both sides, and by the guard-plate is carried to the centre between the two ovens; here it divides and the upper oven in the same manner, and out at the collar on the top. Thus it will be seen that the same heat doubly over the entire surface of two distinct ovens instead of one, and the most naturally, perfectly, and cally, that it can be applied upon an oven. A stop is also placed upon the oven-head between the two ovens, when raised, allows the steam to pass out of the ovens. The effect is, first, to allow meats to be baked in the oven as perfectly as in the tin kitchen before the fire-place. Secondly, to allow all kinds of pastry to be baked upper oven at the same time as perfectly as in the brick-oven; and as to capacity, the oven on the nine-inch bakes nine common pie-tins at once, without changing in any manner, or six loaves of bread. This finishes provement in the Cook-Stove.

The undersigned would next present a Stove arranged for the Dining-Room during the cold season. page 745, of this number.

This stove is arranged on the same general plan of the cook, except that the oven is made single instead of and is brought forward and placed over the second tier of boilers. This stove is a fine heater. It requires room than the parlor-stove; has four good boilers when the oven is not in use, otherwise two boilers. Has cellent oven, and its arrangement for broiling, ironing, and cooking is complete, and is much the cheapest stove its size and capacity in market; altogether, the most durable, and sufficiently ornamented for any sitting-room, admirably arranged for coal as well as wood, and for the small family as well as the dining-room.

Extensive arrangements have been made with MR. JAMES WAGER, of Troy, for the manufacture and sale both Stoves and Patterns for the year 1855, and either will be furnished having all the style and finish that the best artists and manufacturers in the city of Troy can produce.

The manufacturers will understand that these are easy stoves to cast, and simple to mount; that, as the principle is Patented, they can have the control for many years; that exclusive Furnace Rights will be given in the sale Patterns; that having the Patterns for the Cook-Stove, only a few extra pieces will be required for the Dining-Room. All sizes will be furnished that may be desired.

All communications addressed to MR. JAMES WAGER, of TROY, or to the undersigned, at BROCKPORT, N. Y. will receive prompt attention.

M. CHAPIN SADLER.

P. S.—As a proof of the merits of the above improvements, Certificates from those who have tested them by thousands can be furnished, but the following are presumed to be sufficient. The first, with nearly forty names, was signed at an Agricultural Fair held at Rochester, and mostly by strangers to the undersigned, and all within a few hours' time. The others, by the most substantial men engaged in different pursuits.

We, the undersigned, citizens of Monroe County, N. Y., and vicinity, hereby certify that we have had in use, for some time past, the Western American Cooking-Stove, invented by M. C. Sadler, of Brockport; that we consider it decidedly the best stove we have tried, and should much prefer it to any stove we have seen. The oven, we think, is unequalled, being a perfect baker, baking meats, pastry, &c., all at the same time. The boiling arrangement we prefer to any we have noticed, believing that can get more heat with less fuel, and less labor in preparing it. Indeed, this Stove seems to perfect every object designed. It is simple to manage, economical, tasty in appearance, and convenient; and, we believe, the most durable stove in market, and the best adapted to the wants of the farmer, as it does the work in summer without an excessive heat, and is the most pleasant winter stove we have found, giving the most steady and uniform heat, with the least fuel.

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M. C. SADLER, ESQ.—DEAR SIR: I take pleasure in certifying that I have one of your No. 6 Western American Cooking-Stoves in use. I have tested it one year, and find it entirely satisfactory. It is extremely simple in arrangement, most perfect in application for all the variety of cookery. I consider the principle altogether superior to the Three-Flue Low-Oven arrangement, (having tested this arrangement before using yours,) as it is much more rapid in its operation, and requires much less fuel.

Yours, &c.,
ELIJAH FOOT, Keeper Boarding-House, Brockport Institute.
THOMAS TALFORD, Inn-Keeper.
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M. C. SADLER, ESQ.—DEAR SIR: In answer to your inquiry as to the merits of your Western American, I can freely say, I have used one of your largest size, for nearly one year, and find it all that is desirable for a Cooking-Stove. It has the most perfect oven I have ever found—a stove perfectly simple, durable, economical, and convenient; and, I think, particularly adapted to the wants of the farmers, who use their Cooking-Stove for warming their rooms in winter—as the oven is a drum for this purpose. I have kept public house for a number of years, am well-acquainted with stoves, and consider yours altogether superior to any I have used.

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Dec. ; tf. A. NI

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No.

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" " 12 M. and 5 P. M. for Hempstead.
" " 3.45 P. M. for Farmingdale.
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Leave Brooklyn at 6.40 P. M. for Farmingdale, returning Monday, 4.25 A. M.

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" Farmingdale at 7.30 A. M. for Brooklyn.
" Syosset at 7.35 A. M. and 1 P. M. for Brooklyn.
" Hempstead at 6 55 A. M. and 3.50 P. M. for Brooklyn.
" Jamaica at 5.40, 7.35, 8.45 A. M., and 4.35 P. M.

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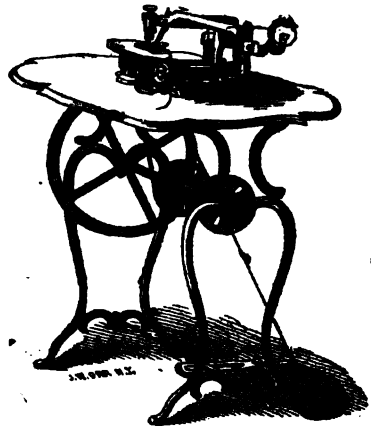
AND JUNE 15, 1852



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Feb. 1y.

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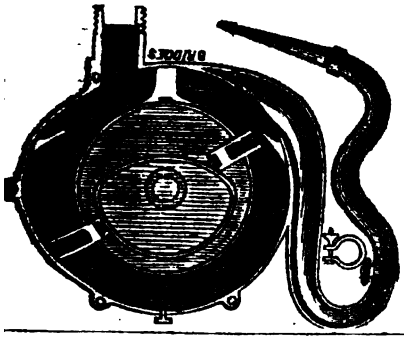

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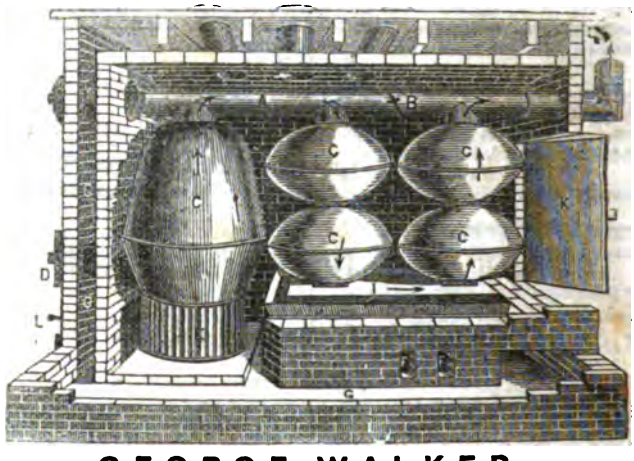

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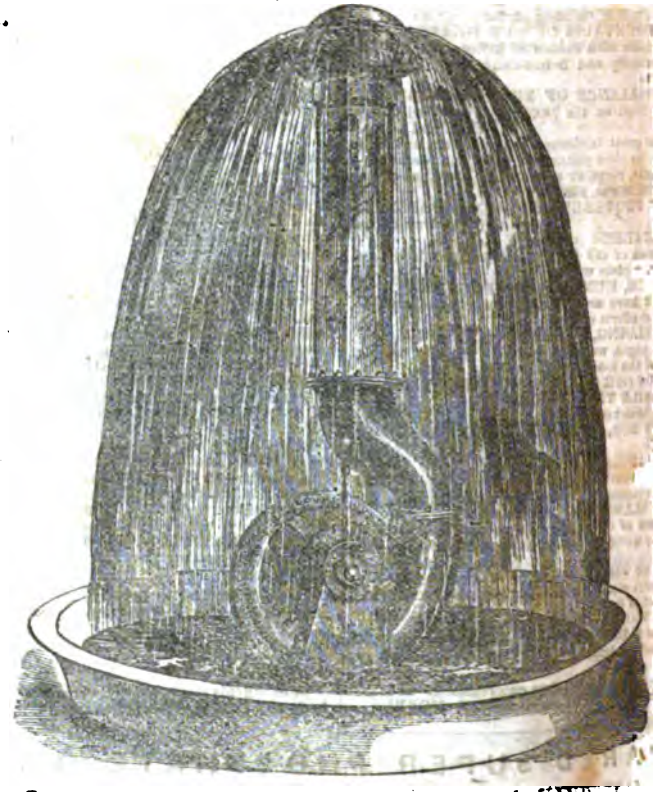

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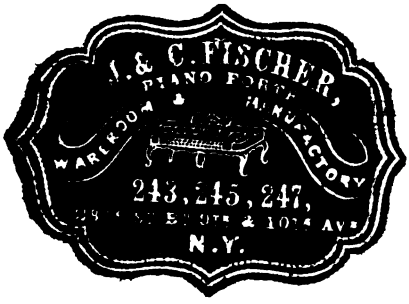

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Dec. '24 tf. *A. NICOL.*

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For power, brilliancy, and richness of tone, elasticity of touch, and beauty of finish, they will not suffer in comparison with those of any other manufacturer, and those desirous of obtaining a really good Piano Forte—one that will prove an equivalent for their means, will find such a one in your beautiful instruments.

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The treble is clear, pure, brilliant and very melodious, the bass is deep, rolling, and sonorous; the middle part is rich and sympathetic, and possesses the power of singing, i. e., of uniting the sound of each tone, in a degree but rarely achieved.—Henry C. Watson.

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MELODEONS.—EXTRACT FROM MUSICAL REVIEW.

In an article in the February number of the *Review*, answering some inquiries in regard to temperament made by "William W. jr., Brookfield, Vt.," I noticed a statement that Prince's Melodeons are tuned in the equal temperament. Since that time I have examined a number of Prince & Co.'s Melodeons, with special reference to the temperament, and have not found one tuned in equal temperament. The temperament in the Melodeons of Prince & Co.'s manufacture that I have examined, approaches nearer the equal than in those of Carhart & Needham, but it is far from equal, as any one "troubled with the nice ear," I think, will decide, if they will try the chords of F and F Sharp in succession.

A TURNER, Poultney, Vt.

We are very happy to stand corrected on this point. We made the statement alluded to above on the authority of a professor of music in this city, without having observed in reference to it ourselves—a thing we very seldom do. We have since examined Prince & Co.'s Melodeons, and find "A. Turner" right. Though nearer the equal temperament than Carhart's it is still unequal. We do know, however, that S. D. & H. W. Smith's Melodeons, sold by Horace Waters, 333 Broadway, are tuned in equal temperament.

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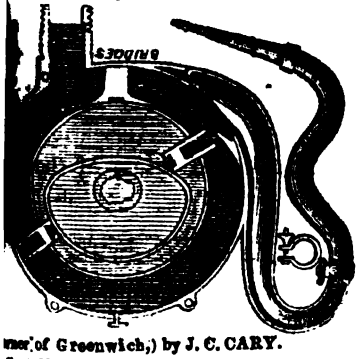

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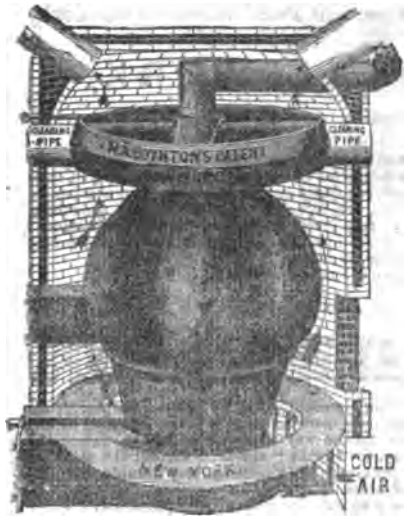

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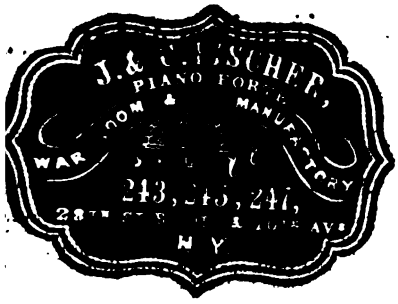

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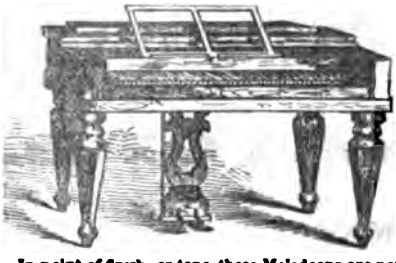

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In point of finish, or tone, these Melodeons are not surpassed by those of any other Manufacturer.

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PUMPS, FOUNTAINS, AND ALL OTHER FORMS OF HYDRAULIC MACHINERY.

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Continues the manufacture of Vertical and Horizontal Double Acting Lift and Force Pumps, Single Acting Lift and Force Pumps, of all sizes, adapted for every situation where large or small quantities are required, which from their simple construction for repairs and examination, combined with his late improvements, and those in progress, is superior to every other form of Pump that has yet ever been constructed for Factories, Mines, Railroad Water Stations, Tanneries, Breweries, Paper Mills, Steamboats, Ships, Water Boats, Pumping Molasses, Stationary Fire Engines, &c., &c.; Cistern and Well Pumps; Horse Powers; Water Wheels; Leather Hose; Hose Couplings; Wrought, Cast, and Copper Pipes; Cast Iron Fountains, of various sizes and patterns, and all other Hydraulic Machinery.

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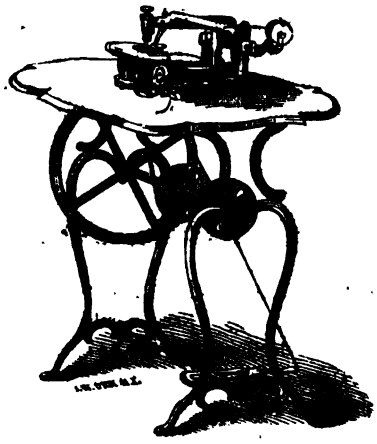
A. B. WILSON'S PATENT,

(*August* 12, 1851,)

AND JUNE 15, 1852



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3. It particularly excels in the rapidity with which work can be executed; in that respect it has no equal.

4. The little *power* required to propel them, enabling even those of the most delicate constitution to use them without injury to their health.

We are now manufacturing a larger sized Machine, more particularly adapted to the sewing of leather, canvas bags, and the heavier kinds of cloths.

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Feb. 1y.

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TERMS OF SUBSCRIPTION.

THE CHRISTIAN PARLOR MAGAZINE will be issued in monthly numbers, commencing with January. Each number will contain 32 pages of original matter and choice selections, and will be embellished with an elegant Steel Engraving, and a Colored Flower, copied from nature; and also with superior Wood Cuts, prepared expressly for this work. Thus, at the end of the year a beautiful volume will be completed of 384 pages.

It will be seen by those who examine the work, that our object is not to show how great the quantity, but how excellent the quality we can give to our subscribers.

Price, Two Dollars a year, in advance.

To Clergymen at half price.

To Clubs of not less than twelve, and paying in advance, One Dollar and Fifty Cents.

In all cases where payment is delayed six months, fifty cents will be added.

Letters *from* this office will be pre-paid.

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All orders, letters, and communications must be addressed to

E. CARPENTER, 116 Nassau-street, New-York.

N. B. Subscribers are cautioned not to make payment to any person claiming to be Agent for the Magazine, unless that person bears a Commission dated within six months previous, and signed by the publisher.

E. CARPENTER.

THE AMERICAN NATIONAL PREACHER.

THE NATIONAL PREACHER.—This valuable periodical, now in the twenty-ninth year of its publication, embodying in its past and present volumes many of the best and most eloquent discourses of American divines of different Evangelical denominations, is still under the editorial supervision of the Rev. Eber Carpenter. Mr. Carpenter is a graduate of Yale College, and has been an able and successful pastor about twenty years. He brings into his sphere of labor sound views in theology, and a discriminating judgment—such as will commend themselves to all who love the truths of the gospel. We wish him large success in this responsible field of labor.—*New York Evangelist.*

The *Preacher* has maintained a high standing for nearly thirty years, and its volumes embody a vast number of able, eloquent, and edifying sermons.

The *Preacher* aims to give select discourses upon the great themes of the Gospel, held in common by all evangelical denominations, furnished by ministers of those several denominations, thus forming a truly National and a truly Catholic pulpit. Its back volumes have passed into our standard religious literature, and will have a permanent value; and its new issues come with a freshness that makes them ever welcome. It is a medium through which ministers of various denominations may know each other, and do each other good. It is a useful work for the family—especially for home preaching on rainy Sabbaths; and for churches left destitute of the ministry. We hope that Mr. Carpenter will be able greatly to enlarge the sphere of its influence. His name will be a sufficient guarantee of the character of the work. The *Preacher* is published at the cheap rate of *one dollar per annum.*—*New York Independent.*

THE AMERICAN NATIONAL PREACHER. New York. 116 Nassau-street.—We have repeatedly called attention to this monthly, because we think it adapted to be useful and worthy of a liberal patronage. We understand that all the previous volumes, twenty-eight in number, can be obtained at the low price of $1 a volume. No library is complete without them. We would especially recommend to congregations forming libraries, and individuals who are intending to make a present of books to their pastors, to purchase the entire set. A more acceptable present to them cannot be made. We notice with pleasure that Rev. E. Carpenter, the present editor and proprietor of this periodical, is sparing no pains to increase its value, by obtaining the ablest and most approved efforts of the American Pulpit.—*New York Christian Intelligencer.*

AM. NATIONAL PREACHER.—We take pleasure in inviting the attention of our four thousand clerical readers to this truly valuable and national work. We trust that a large proportion of them have long been patrons of the work, but there are probably many who have not; and among this number, we doubt not, there are scores who would subscribe for it at once, did they but know its intrinsic value. It is under the patronage of all evangelical denominations, and has long maintained a very high standing. It contains, in its twenty-eight volumes now complete, more than six hundred sermons, many of them among the most able, eloquent, and edifying that have been preached by American divines during the last thirty years,—indeed, we scarcely know where another work of the same size could be found, containing an equal amount of sermonic matter. It has always been ably conducted, but never more so than at present. As the 29th volume commences with January, this is a favorable season to subscribe. A few complete sets of the work may be obtained at reasonable prices, by early application to the proprietor, Rev. E. Carpenter, 116 Nassau Street, New York.—*Library Reporter, Boston, Mass.*

The great expense of paper and printing requires promptitude in remittances, which should always be made in advance. Subscribers in arrears, who receive bills, are respectfully requested to attend to them without delay. The twenty-eight back Volumes, are kept constantly on hand, and full sets can be supplied. Letters may be addressed (post paid) to THE AMERICAN NATIONAL PREACHER,

116 Nassau-street, New York.

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WINTER ARRANGEMENT.

On and after MONDAY, Nov. 20th, the Trains will leave Chambers St. Station, as follows:—
Express Train, 7 A. M., connecting with Northern and Western Trains.
Mail Train, 9 A. M., Through Way Train, 12 M.
For Poughkeepsie Way Passenger Trains at 7 15 and 10 30 A. M.
For Peekskill at 3, 4 and 5 30 P. M.
For Tarrytown at 1 and 8 P. M.
The Tarrytown, Peekskill and Poughkeepsie Trains stop at all the Way Stations.
Passengers taken at Chambers, Canal, Christopher, 14th and 31st Streets.
SUNDAY MAIL TRAIN at 9 A. M., from Canal St. for Albany, stopping at all Way Stations.

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PASSENGER TRAINS LEAVE PHILADELPHIA
For BALTIMORE at 8.30, A.M., (12.45, and 3, P.M. Express,) and 11 P.M.
For WILMINGTON at 8.30, A. M., 12.45, 3, 4.30, and 11 P. M.
For NEW CASTLE at 8.30, A.M., 12.45, and 4.30 P.M.

TRAINS FOR PHILADELPHIA.

Leave BALTIMORE at (8.30, Express,) 11, A.M., 5.30 and 8 P. M.
Leave WILMINGTON at 7.45, 11.15, A.M., 2.15, 9 and 11 P. M.
Leave NEW CASTLE at 7.30, 10.45, A.M., 1 P.M.

BALTIMORE AND HAVRE DE GRACE ACCOMMODATION TRAIN.

Leaves HAVRE DE GRACE at 8 A. M.
Leaves BALTIMORE at 3 P. M.

S. L. SPAFFORD, General Superintendent.

HARLEM RAILROAD.—INLAND ROUTE.

On and after Monday, Dec. 11, Sundays excepted, for Albany and Troy.

LEAVING DEPOT COR. WHITE & CENTRE STS.

Mail Train at 7.30 A.M., stopping at Williams' Bridge and Mail Stations North.

Way Express 3.00 P.M., stopping at White Plains, Newcastle, Croton Falls, and stations North, connecting at Chatham Four Corners with Western Railroad Express Train, arriving at Albany at 11 P.M.

Passengers may also procure Tickets, and have their baggage checked for Utica, Buffalo, and other places West and North of Albany, at the Company's Offices, corner of Bowery and Broome st., and Fourth Av. and 28th st.

RETURNING TO NEW-YORK.

Mail Train leaving Chatham Four Corners at 6 A.M., stopping at all Mail Stations above Williams' Bridge, arriving at New-York at 12.45 P.M.

Leaving Depot Western Railroad, corner of Maiden Lane and Dean st.

Express Train, leaves Troy at 2.30 P.M., and Albany 2.45 P.M., stopping at Chatham Four Corners, Philmont, Martindale, Hillsdale, Copake, Millerton, Amenia, Wassaic, Dover Plains, South Dover, Pawlings, Paterson, Towners, Brewster, Croton Falls, White Plains, and Williams' Bridge. Passengers by this train will not be landed between Croton Falls and Williams' Bridge, unless coming from above Croton Falls. Passengers between Croton Falls and Williams' Bridge must take the Regular Train, leaving Croton Falls at 3 P.M.

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It is the only article that is in the market which can be used *generally* with profit, either in gardens or in fields. It is an excellent substitute for barnyard manure, and, above all, cheap and economical. Three dollars worth will manure an acre of corn, and cause it to come up quicker, grow faster, and yield heavier, than any other manure. It is excellent for all kinds of garden crops and fruit trees—its results are sometimes astonishing.

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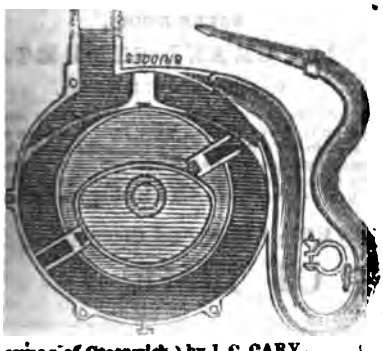
J. W. CARY'S ROTARY FIRE-ENGINE PUMPS.



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These pumps are well calculated for all the purposes for which pumps or hydrants may be used, viz., Factories, Steamboats, Tanneries, Breweries, Distilleries, Railroads, Water Stations, Hotels, Mines, Garden Engines, &c.

Among the many testimonials given of this pump, is a gold medal awarded at the last great Fair of the American Institute.

No. 1 is a house or well pump and domestic Fire Engine, and will raise from 20 to 30 gallons per minute.

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No. 2½ " 200 " 120 "

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The quantity raised can be doubled, by doubling the revolutions. These machines are manufactured and sold by the subscribers at Brockport, N. Y.; also in this city, 48 Courtland street,

gine r of Greenwich,) by J. C. CARY.

Sept. 18-1y. CARY & BRAINERD.

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3m.-Nov. '54.

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Aug. 7. tf.

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For two hundred, one elegant Fine Gold Ladies do., Hunting Case, worth,				50 00.
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Our Agents may, should they prefer cash, deduct 25 per cent for their Commission and remit us the balance.

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In an article in the February number of the *Review*, answering some inquiries in regard to temperament made by "William W. jr., Brookfield, Vt.," I noticed a statement that Prince's Melodeons are tuned in the equal temperament. Since that time I have examined a number of Prince & Co.'s Melodeons, with special reference to the temperament, and have not found one tuned in equal temperament. The temperament in the Melodeons of Prince & Co.'s manufacture that I have examined, approaches nearer the equal than in those of Carhart & Needham, but it is far from equal, as any one "troubled with the nice ear," I think, will decide, if they will try the chords of F and F Sharp in succession.

A TUNER, Poultney, Vt.

We are very happy to stand corrected on this point. We made the statement alluded to above on the authority of a professor of music in this city, without having observed in reference to it ourselves—a thing we very seldom do. We have since examined Prince & Co.'s Melodeons, and find "A. Turner" right. Though nearer the equal temperament than Carhart's it is still unequal. We do know, however, that S. D. & H. W. Smith's Melodeons, sold by Horace Waters, 333 Broadway, are tuned in equal temperament.

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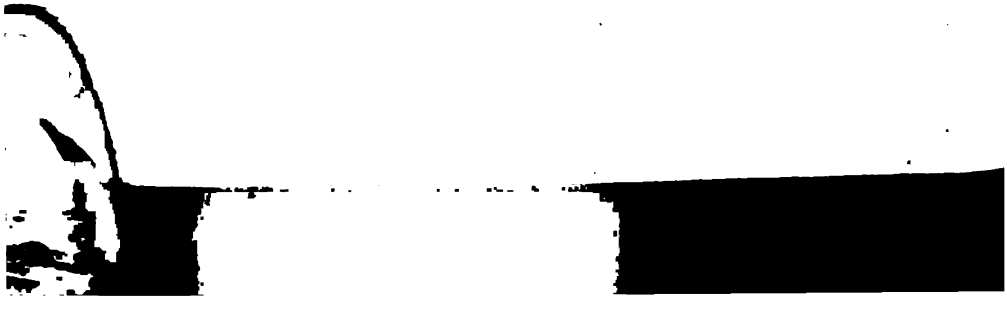

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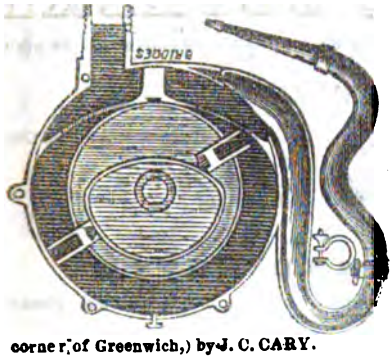

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Do. Ayrshire Cattle, Do. Devons do.
Do. South Down Sheep, Do. Cotswold, Oxfordshire or Leicester Sheep,
Swine and Poultry, very fine, of different breeds. Also, Fine, well-broken Devon Working Oxen.

All letters post-paid will be promptly attended to. Address,

AARON CLEMENT,
South Street, above 9th Street, Philadelphia

Feb. 54 tf.

McFARLAND'S
Improved Fire and Burglar Proof Safes.

THE under signed would respectfully call the attention of the public to the above unequalled safeguard, proof against the devouring element of fire, as well as the most successful burglar.

To Merchants, Jewellers and Bank Directors, we would only say, examine them, and the proofs, and you will be convinced of their superiority over all others manufactured.

Our business is done in a plain straight forward way, without resorting to humbug or large talk.

Below is one of the many testimonials we are daily receiving from all parts of the country, and it speaks for itself. Messrs Pond & Hitchcock's Oil Store was situated directly under the Pearl Street House, and was totally consumed in that great fire of Aug. 23d.

Our depot, where an assortment of all kinds and sizes are constantly on hand, is at 33 MAIDEN LANE,
2 doors from Nassau St., N. Y.
WM. McFARLAND & CO.

NEW YORK, Aug. 23, 1853.

Messrs. McFarland & Co.:

GENTS:—It affords us pleasure to inform you that the Fire and Burglar Proof Safe we purchased of you, preserved our books and papers at the disastrous fire of the Pearl St. House, last evening, in the most perfect manner. Although it was covered throughout the fire, with burning Rosin and other oils, and directly under a broken gas pipe, in the most intense heat, it remained true to its name, and its contents, when taken out, were not even scorched, and hardly bore the smell of fire. To any one in want of a superior Safe, a perfect safeguard against fire, we cheerfully recommend your manufacture, having had a personal experience of their excellence.

Yours truly,

POND & HITCHCOCK.

WAREHOUSES.

Boston, Mass., No. 14 Blackstone Street.
Baltimore, Md., No. 145 Platt Street
Chicago, Ill., corner South Water and Franklin Sts.
Portland, Oregon, 87 Front Street.
San Francisco, Cal., 27 California Street.
Port Phillip, Australia, 19 West Street.

Agents.—Kendall, Richardson & Co., Bath, Me. Henry Butler, Bangor, and T. McFarland, Richmond, Me. Jan. 1y

DEMONET & MEYER'S
INFALLIBLE LIQUID HAIR DYE.

THIS is a new article, just presented to the public. The proprietors have made the human hair the study of their lives, and having had occasion to use the thousand and one specifics which ignorant charlatans palm upon the public, they are able to judge of their injuriousness. After the invention of the present Dye, they for a long while, content to satisfy their own customers, made use of it only in their own business; but its merits becoming known, they were absolutely compelled to bring it before the public. Here it has been but a short time, yet its success has been unprecedented. Requests for the appointment of agents for its sale have poured in by every mail, while the orders for the article itself have almost exceeded the ability of the proprietors to supply. Its merits may be curtly summed up as follows: It is easily applied, and can be used by all without danger, full directions accompanying each bottle. It does not color the hair by scorching, like other preparations, but acts upon it by a newly discovered chemical power. Recent researches show that the hair is triangular, and in its natural state possesses all the powers of the prism. To restore this prismatic virtue is the theory of the Hair Dye. It also gives the fibres their soft and glossy texture, and protects the sacs in which all of them terminate. It does not stain the skin, and is the only compound of the kind upon which perfect reliance can be placed, as it never fails in giving a beautiful and natural black or brown color to the hair, whiskers or eyebrows.

The proprietors are prepared to furnish it in large or small quantities. Price $1 and $1 50 per bottle, according to size. Liberal deduction to those who buy to sell again.

In answer to the numerous inquiries from every part of the country, Messrs. D. & M. would say that if there be no agent who sells their Dye in the vicinity where the party wishing it resides, by inclosing $1 a bottle will be forwarded. Persons sending requests for the agency of it will please state plainly the place or district in which they wish to dispose of it.

DEMONET & MEYERS, Proprietors,

April, '54, tf. No. 13 Courtlandt Street, under the Western Hotel, N.Y. City.

SCRIBNER'S OAK OIL.

This very valuable Family Remedy for the cure of wounds, bruises, cuts, burns, and other diseases of an inflammatory nature, is now regarded as a desideratum in medicine. For inflamed eyes and catarrhal affections this application will be found to be a mild, safe and effectual remedy. For Bleeding Piles there is no application so effectual as the Oak Oil. Diarrhœa, scurvy, rheumatism and chilblains are speedily relieved by its use. For sale by Druggists generally, and by the Proprietors,

April, '54, tf. **DAY & VAN DEUSEN, 114 Chambers Street, New-York.**

REMOVAL.

The Office of VAN DEUSEN'S IMPROVED WAHPENE is removed from No. 123 to 114 CHAMBERS ST., where the Proprietors, Day & Van Deusen, invite their friends and patrons and the public at large, to call and procure the above celebrated article.

The Wahpene, as is well known to those who have used it, is not a Dye, gotten up to color the hair transiently; but a medical preparation which penetrates the bulb or root of the hair, promoting a healthy action throughout, and restoring it to its natural fullness of growth. Testimonials of its efficacy, in numerous instances, from sources of the highest respectability, may be seen at the Office, No. 114 Chambers Street.

SUPER PHOSPHATE OF LIME,

FROM THE

BARTLEY CHEMICAL WORKS,

OF STATAN ISLAND.

The Subscriber begs leave to inform the Farmers and Gardeners who have left orders for the above Manure, that he is now prepared to deliver the same, either from the Works on Staten Island, or from the Depot in New York.

Other persons requiring supplies of this well known and valuable fertiliser, are requested to make application early, as the demand for this season will be large.

ALFRED F. KEMP, No. 62 Beaver Street, New-York.

PATENT EXPANSION BITS.

The above Cuts represent three sizes PATENT EXPANSION BITS, when taken collectively form a complete set of Center Bits, which will bore any required diameter from ¼ inch to 2½ inches.

THIS set of Expansion Bits will perform all that $1 ORDINARY BITS of 1-16 inch sizes can be made to, and also cut numerous sizes between, saving half the expense.

ALL Artists in Wood who have so frequently desired a Bit between the sizes of any in their set, will appreciate its value at sight, and all persons using Bits will find them the great desideratum.

The above PATENT EXPANSION BITS can be obtained at the principal Hardware Stores in the City, and of the Patentee, C. L. BARNES, at his Manufactory, 27 *Hamersley Street, N. Y.*

☞ Town, County, and State Rights for sale. Apply to

CHARLES L. BARNES,

Dec. 18 **No. 9 Cottage Place, N. Y.**

BLAKE'S PATENT FIRE PROOF PAINT.

The original and only article that can be sold without infringing the patent, will at all times be kept, both ground in Oil and in Dry Powder, at 119 PEARL STREET, by the Patentee.

The Patent has just been decided in the United States Court to be good and valid.

In consequence of this decision throwing the entire business into my hands, I shall very materially reduce the price, as I can manufacture a large quantity much cheaper, proportionally, than a small one. All infringers will be prosecuted.

June, 1y. **WM. BLAKE, Patentee, 119 Pearl Street, New-York.**

WRITING TABLES OF NEW CONSTRUCTION.

WALLING & HEDGES, No. 252 Ninth Avenue,

Are now manufacturing and offer for sale a new article in the furniture line, combining the desk, table and chair, unlike anything ever before offered to the public, being, when closed up, a fancy centre table, and when opened, a cushioned arm chair, with desk and writing materials complete, the opening or closing of which requires but one second. This unique piece of furniture must soon come into general use, as it is well adapted to the parlor, the sitting-room, library, office, school-rooms, examining rooms, council chambers, legislative halls, for students, reporters, &c. The examination of the article by a discerning public is particularly solicited. The trade supplied. N. B.—Patent right secured. June, 1y.

REFRIGERATORS.

PARKER & BROWNE, MANUFACTURERS,

Nos. 20 and 22 COMMERCE STREET,

Aug. 1 yr.) **WHOLESALE AND RETAIL.** (*Between Bedford and Bleecker Sts.*, NEW YORK.

S. R. PARKHURST'S
PATENT BURRING MACHINES.

The subscriber, who is the inventor of the

BURRING MACHINES

which are attached to Carding Machines, informs

Woollen and Cotton Manufacturers,

that he has increased facilities for manufacturing superior Burring Machines, and likewise for Second Breakers. In addition to which, manufacturers who prefer the metal cylinder, invented by J. L. Tuttle, may be supplied with them at short notice.

The subscriber is giving his personal attention to the manufacture of these Machines, which he has not done heretofore.

The legal right for building these Machines is in the subscriber.

Orders addressed to HAYES & REDFIELD, No. 90 Beaver Street, will meet with prompt attention.

S. R. PARKHURST. Feb. tf.

New York, January 17, 1854.

ATKINS' SELF-RAKING REAPER.

40 OF these machines were used the last harvest in grass or grain, or both, with almost uniformly good success, in nine different States and Canada.

TWENTY-SIX PREMIUMS,

including TWO *at the Crystal Palace*, (silver and bronze medals,) were awarded it at the autumn exhibitions. I am building only 300, which are being rapidly ordered. Mr. Joseph Hall, Rochester, N. Y., will also build a few.

☞ Early orders necessary to insure a reaper.

Price at Chicago $175—$75 Cash with order, note for $50, payable when reaper works succesfully, and another for $50, payable 1st December next, with interest. Or $100 cash in advance.—*Warranted to be a good Self-Raking Reaper.*

Agents, properly recommended wanted throughout the country. Experienced agents preferred. It is important this year to have the machines widely scattered.

Descriptive circulars with cuts, and giving impartially the difficulties as well as the successes of the reaper, mailed to post-paid applications.

J. S. WRIGHT,

"Prairie Farmer" Warehouse, Chicago, Feb. 1854.

GWYNNE'S
PATENT REACTION CENTRIFUGAL PUMP AND FIRE ENGINE.

Adapted to any situation; unlimited in power; certain in action; permanent in use; and, withal, so low in cost, that they are rapidly superseding all others. Call and be satisfied of these facts at the office and warehouse of UNION POWER COMPANY of U. S, No. 33 Broadway; removed from No. 24, opposite present stand. June, tf

THE UNITED STATES JOURNAL

NOW IN ITS FIFTH VOLUME,

A Newspaper of the very Largest Class,

Well filled with the Current News from all parts of the World,

With a large amount of Literary and Scientific Matter, Original and Selected,

BANK NOTE LIST AND PRICE CURRENT,

AND, AS A NEW AND VALUABLE FEATURE,

TWO BEAUTIFULLY ENGRAVED PORTRAITS OF DISTINGUISHED INDIVIDUALS,

WITH BIOGRAPHICAL SKETCHES, IN EACH NUMBER, PUBLISHED ON THE FIRST OF EACH MONTH, BY

J. M. EMERSON & CO.,

1, 3, 5 & 7 Spruce Street, New York,

AT THE UNPRECEDENTED LOW PRICE OF 25 CENTS A YEAR.

To induce persons to send in Clubs of Subscribers, the following Premiums are offered:—

TERMS AND PREMIUMS FOR CLUBS.

SINGLE SUBSCRIPTION—Twenty-five cents a year.

$1, four copies and either of following works:—

"Future of Nations." By Louis Kossuth.
"Essay on Wages."
"Use of Tobacco." Its Physical, Intellectual and Moral Effects.
"Teeth." Their Structure, Disease and Management, (with many engravings.)
"Temperance and Tight Lacing." By O. S. Fowler.
"Phrenology and the Scriptures." By John Pierpont.

$2, eight copies and either of the following works:—

"A Trap to catch a Sunbeam." By Miss Blanchie.
"The Cloud with Silver Lining." By Miss Blanchie.
"Star in the Desert." By Miss Blanchie.
"Daniel Webster." By Rufus Choate.
"Psychology, or Science of the Soul." (Illustrated.)

$3, twelve copies and either of the following works:—

"Moore's Melodies."
"Moore's Lalla Rookh."
"Uncle Tom's Cabin."
"Art and Industry." By Horace Greeley.
"Characters in the Gospels." Illustrating Phases of Character at the present day. By E. H. Chapin.
"Poetical Love Token," (with gilt binding.)
"Poetry of the Heart," (with gilt binding.)
"Gems from American Poets." " "

$4, sixteen copies and one copy of the "United States Magazine" one year.

$5, twenty copies and either of the following works:—

"The Life and Adventures of Punchinello. (Embellished with 100 designs.)
"Confessions of Fitz-Boodle and Tremendous Adventures of Major Gahagan." By Thackeray.
"Book of Snobs." By Thackeray.
"New Elements of Geometry." By Seba Smith.

$6, twenty-four copies and either of the following works:—

"Egypt, Past and Present." (Got up in splendid style, with twenty elegant illustrations.) By Joseph P. Thompson.
"Way Down East, or Portraitures of Yankee Life." 384 pages. By Seba Smith, the original Major Jack Downing. With elegant illustrations.
"Bertha and Lily, or the Parsonage of Beech Glen." By Mrs. E. Oakes Smith. A highly interesting romance. Just published, and beautifully illustrated.

$8, thirty-two copies and either of the following works:—

"A Journey to Central Africa, or Life and Landscapes from Egypt to the Negro Kingdoms of the White Nile." By Bayard Taylor. Illustrated with elegant tinted plates and engravings on wood, from drawings by the author, and with a portrait of the author in Oriental costume. Complete in one handsome volume, about 500 pages.
"Oriental and Sacred Scenes." From Notes of Travel in Greece, Turkey and Palestine. A splendid parlor work, embellished with colored plates.

$12, forty-eight copies and either of the following works:—

"Willson's Outlines of History." Illustrated by numerous Geographical and Historical Notes and Maps, and embracing Ancient and Modern History, together with "Outlines of the Philosophy of History." 860 pages, 8vo.
"The Works of Josephus." Complete in one volume of over 880 pages, in morocco binding, and containing a large number of beautiful tinted illustrations.

The books will be sent, postage paid, by return mail on the receipt of the money.

☞ Canada subscriptions, 37 1-2, as we have to prepay the postage to the line. Clubs increased in proportion are entitled to the premiums offered.

ADDITIONAL PREMIUMS.

In addition to the above, we will, on the 25th day of May, 1855, give $1022 in the following premiums to the twenty-six persons forwarding between now and that time the twenty-six highest numbers of subscribers, in their order.

The first premium, in money	$300
The second premium, a sewing machine worth	125
The third premium, a sewing machine worth	100
The fourth premium, a gold watch worth	100
The fifth and sixth, each a gold watch worth	50
The next ten, each a silver watch worth	25
The next twenty, each, such books as they shall select, at publishers' prices, worth	10

SPECIMEN COPIES OF THE JOURNAL SENT GRATIS.

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J. M. EMERSON & CO.,
1, 3, 5 & 7 Spruce Street, New York

J. & C. FISCHER,

MANUFACTURERS OF

FRENCH GRAND ACTIO

PIANO-FORTES,

ALSO,

ÆOLEAN PIANO-FORTES, WITH PATENT TUNABLE R

MANUFACTORY AND WAREROOM,

Nos. 243, 245, 247 & 249 West 28th Street,

Between 9th and 10th Avenues, NEW-YO

J. & C. FISCHER'S PIANO-FORTES have the TUBE, (which is supported on centres,) the METAL PLATES, the REVERSED BRIDGE, and all modern Improvements; and for *firmness, durability,* and KEEPING IN TUNE, are unsurpassed. They are made of thoroughly seasoned materials—under their own immediate supervision, and warranted to stand any climate.

N. B.—Piano-Fortes Repaired, Tuned, and taken in Exchange. Oct.

FRUIT AND ORNAMENTAL TREES.

The Subscriber offers for sale the present Fall at his Nurseries, near Hightstown, New-Jersey, a large and select assortment of different kinds of Fruit and Ornamental Trees. They can be purchased at reasonable prices, either at wholesale or retail.

Thirty thousand Peach Trees, one years' growth from the bud. Ten thousand Standard Cherry Trees, one, two, and three years' growth. Three Thousand Dwarf Cherry Trees, on Mahaleb Stocks, two and three years' growth from the bud. Two thousand Dwarf Pears, on French Quince stocks, of one and two years' growth from the bud. Also, a fine collection of Standard Pears, Plums, Apricots, &c., &c.

The ornamental department consists of the largest size of Deciduous and Evergreen trees for Streets, Parks, Gardens, &c. Also, a large collection of plants for hedging, such as Hemlock, American Arbor Vitæ, Osage Orange, &c. Fifty Thousand Sugar Maple Seedlings. For particulars, reference can be made to my catalogue, which will be sent to all applicants on the receipt of a postage stamp. Orders from a distance are punctually attended, and the greatest care is exercised in packing trees, so that they may be sent any distance with perfect safety.

ISAAC PULLEN, Hightstown, Mercer Co., N. J.

AGRICULTURAL WAREHOUSE.

AWARDED FIRST PREMIUM

BY THE

AMERICAN INSTITUTE

In 1846—1848—1849—1850—1852 and 1853,

193 *FRONT STREET, N. Y.*

WHERE may be found a complete assortment of Agricultural Implements, embracing all the new and most approved styles. Ploughs, of every description, among which are

Moore's Celebrated Premium,"

"EAGLE," "PEACOCK," HALL'S STEEL AND BAR-SHARE, "MINOR, HORTON & Co's," "DIAMOND PATTERN," "CENTRE DRAUGHT." &c., &c.

STRAW CUTTERS,—Patent Self Sharpening Straw Cutters, the best article in use; also "Hovey's," "Sinclair's," Greene's," and a variety of other Cutters in general use.

Corn Shellers, Fanning Mills, Horse Powers, Threshing Machines, Corn and Cob Mills, Rakes, Hoes, Shovels, Spades, Hay Forks, Manure Forks, &c., &c.,

GUANO, BONE DUST, PLASTER, SUPER PHOSPHATE OF LIME, &c.

Copper, Brass and Iron Wire Cloth.

All of which will be warranted to be of the best quality and sold at the lowest prices.

JOHN MOORE*, 193 *Front Street.

MANHATTAN LIFE INSURANCE COMPANY,

146 *BROADWAY, N. Y., Cor. Liberty Street.*

CASH CAPITAL AND ACCUMULATION, $290,000.

$100,000 DEPOSITED WITH THE COMPTROLLER OF THE STATE FOR THE SECURITY OF ALL POLICY HOLDERS.

Persons Insuring with this Company, will be entitled to their pro rata share of the dividends. The rates and principles adopted have stood the test of experience, and must secure, beyond contingency, the object for which Life Insurance is effected,—immediate and permanent aid to the WIDOW & ORPHAN.

N. D. MORGAN, *President.*

C. Y. WEMPLE, *Secretary.*

ABRAM DU BOIS, M.D., *Medical Examiner,* attends at the office daily, from 2 to 3 o'clock P.M.

Prospectuses to be had at the office gratis.

WHEELER & WILSON MANUFACTURING COMPANY'S

SEWING MACHINE,

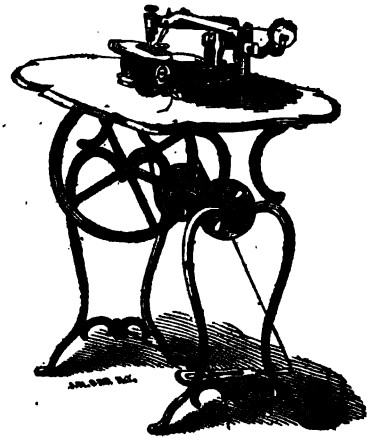
ANUFACTURED AT WATERTOWN, CONN.

OFFICE, 265 BROADWAY, NEW-YORK.

A. B. WILSON'S PATENT,

(*August* 12, 1851,)

AND JUNE 15, 1852



AGENCIES AT

63 COURT ST., BOSTON,

172 CHESTNUT ST., PHILAD'PHIA,

IRON HALL, WASHINGTON.

These Machines have been in successful operation, in the hands of manufacturers and families r the past two years, and in every case have given universal satisfaction. The Proprietors are now repared to offer them to the public, with that increased confidence in their merits which the united stimony of their numerous customers has strengthened and confirmed.

These Machines are entirely different from any other, the principles on which they are made eing *exclusively* our own.

Among the advantages of this Machine over any others are the following:—

1. The simplicity of its construction, and the ease with which it can be kept in the most perfect rder.

2. The perfect manner with which the operator is enabled to stitch and sew the various kinds of work, from the finest linen to the coarsest cloths.

3. It particularly excels in the rapidity with which work can be executed; in that respect it has no equal.

4. The little *power* required to propel them, enabling even those of the most delicate constitution to use them without injury to their health.

We are now manufacturing a larger sized Machine, more particularly adapted to the sewing of eather, canvas bags, and the heavier kinds of cloths.

An examination of our Machines is respectfully solicited at our Office, 265 Broadway.

Feb. 1y.

CHURCH AND PARLOR REED ORGA

M. LUCAS & CO.,

(SUCCESSORS TO M. Q. NICHOLS.)

MANUFACTURERS OF CHURCH AND PARLOR ORG

WAREROOMS, 90 TREMONT STREET, BOSTON,

Where may be found a great variety of Instruments of superior tone and finish.

These Organs are carefully and substantially made and tuned in the equal temperament, consequ good in the remote as in the common keys.

Every Instrument is warranted to be unsurpassed in quality and durability by any in the Americ ket, and for purity, beauty, and strength of tone are believed to be unequalled.

Instruments for Parlors, from $50 to $150. Instruments for Churches, from $125 to $500.

A FARM AND WATER POWER FOR SAL

FOR SALE.—A Farm with extensive Water Power Privilege, together with Acres of land, located about two and a half miles from Ellenville, in Ulster Co., on the line of the Del and Hudson Canal. About one-third of the land is in a high state of cultivation; six dwelling houses accommodate nine families; a store, with sheds adjoining; barn and sheds, and a saw-mill; also, a fail failing stream of water, with falls sufficient to erect several over-shot water wheels, all of which is venient to the dwelling and the road leading to the canal.

For further particulars enquire of S. CUTTER, No. 386 Ninth Street, New-York: G. SANFORD, Mill Street, Po'keepsie, or of the Proprietor on the premises.

tf. JAMES M. SANFORD.

To Pork and Beef Butchers, Private Families and Others

F. B. DIDIER & BRO'S

IMPROVED SAUSAGE OR PIE MEAT CUTTER FOR 1854.

PATENT APPLIED FOR.

This celebrated Machine is warranted, with proper care and use, to cut or mince 4 lbs. of fine meat per minute; or 240 lbs. per hour,—not liable to get out of repair, and easily operated by a small boy. The simplicity of construction and the ease with which every part subject to wear may be replaced, serve to recommend this as the cheapest and most perfect machine ever invented. Being made entirely of Iron, (with one or two exceptions) renders it more durable than those usually made of wood, and much easier kept sweet and clean, and no warping or swelling when necessarily used, as is the case with others.

N. B.—One great objection to Meat Cutters is that the knives are stationary. In our machine the objection is obviated, as the knives can be taken out, cleaned and put back in a minute. The machine is regulated for cutting fine or coarse meat by putting in more or less knives.

It is warranted to cut Sausage or Pie Meat equal to any machine in the country, both as regards quantity and quality. Also, warranted to cut five times the amount, and of a better quality than any cutter at the price—Again, less complicated, more durable, requiring less power to operate it than any similar invention of the age.

The Maryland State Agricultural Fair, and the Maryland Mechanics' Institute, awarded this Machine a first-class premium in the years 1851, 1852, and 1853; and committees of the like flattering character from discriminating Judges, have, on all occasions of competition, favored this useful article. Retail price, $5.50.

A first-rate article of Sausage Stuffer or Filler retail from $4, $4 50, $5, $6 50.

N. B.—Agricultural Implement Makers and Venders, Hardware Merchants and others, would do well to take this machine on sale, owing to its popularity, and the liberal discounts made to the trade. The article is bound to be in possession of every farmer and private family. We have in store and ready for the season, about 5000 Cutters, for which we solicit buyers, Wholesale and Retail.

Sept., 3mos F. B. DIDIER & BRO., No. 97 N. Paca Street, Baltimore, Md.

MEXICAN PHOSPHATIC GUANO.

A permanent manure that will not evaporate in the atmosphere, burn the crop, or exhaust the soil.

☞ One ton of this PHOSPHATIC GUANO, is equal to *three* tons of Peruvian or any other ammoniacal Guano on exhausted lands, in yielding Wheat, Corn, Rye, Oats, or other Grains, Clover, Grass, &c.

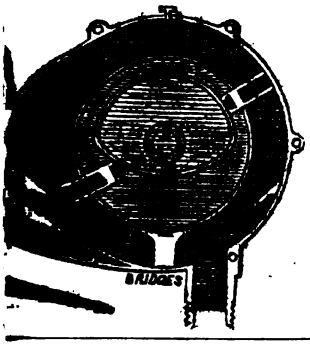
Price at Retail, per Ton of 2000 *lbs.* $40.
" " *for 5 Tons* " $38.

Dealers supplied at wholesale from cargoes now arriving, on liberal terms. Full *particulars on application* to the subscriber.

Every package is branded with the name of the Sole Agent and is guaranteed.

Aug. 7. tf. Apply to H. N. FRYATT, Sole Agent, 160 Water Street, New-York City.

W. CARY'S ROTARY FIRE-ENGINE PUMPS.



THE Inventor, after thoroughly testing this engine pump, for the past two years,) feels confident that it is not equalled by any thing now in market, in the way of raising or forcing water: the motion being rotary, the stream is constant, without the aid of an AIR vessel. The packing is self-adjusting, very durable, and cannot well get out of order.

These pumps are well calculated for all the purposes for which pumps or hydrants may be used, viz., Factories, Steamboats, Tanneries, Breweries, Distilleries, Railroads, Water Stations, Hotels, Mines, Garden Engines, &c.

Among the many testimonials given of this pump, is a gold medal awarded at the last great Fair of the American Institute.

No. 1 is a house or well pump and domestic Fire Engine, and will raise from 20 to 30 gallons per minute.

No. 2 will raise 160 gallons at 120 revolutions.
No. 2½ " 200 " 120 "
No. 3 " 300 " 120 "

The quantity raised can be doubled, by doubling the revolutions. These machines are manufactured and sold by the subscribers at Brockport, N. Y also in this city, 48 Courtland street, (corner of Greenwich,) by J. C. CARY.

CARY & BRAINERD.

Sept. 18–1y.

ENAMELED FURNITURE.

ubber invites the attention of those about furnishing ant and fashionable style of *Chamber Furniture*, manufactured from the best of materials and by perienced and faithful workmen, under his own su-

nsisting of Bureau with Glass, Wash-stand, Table, nd 4 Cane seat Chairs, are offered as low as $25. le tops as low as $45 the suit and upwards, with the Commode and Rocker to $150 the set, price varying o style and finish. Every article warranted.

Hotel and Boarding House Keepers will find this the cheapest and best place to get this style of *Furniture* as we manufacture nothing but the Enameled.

Orders from a distance promptly attended to, and goods carefully packed.

S. M. WARWICK,
No. 92 WHITE STREET,
Dec. 1y. *Three doors West of Broadway, N. Y.*

PORTRAITS.

ffer, from a long and steady practice in the art of, as well as by her success in, portraying upon canvas the

LIFE LIKENESS OR PORTRAIT OF THE SETTER,

warranted in inviting those who are wanting for themselves or their friends, a well-finished and lasting likeness, to call ms, 193 BLEECKER STREET, where Specimens of Art, in various styles, may be seen. Terms Reasonable.

MRS. LILLY M. SPENCER,
193 Bleecker Street, N. Y.

ENTS, INVENTIONS, AND DRAWINGS.

E. BAILEY, Agent for the procuring and sale of Patent Rights for this country, Great Britain and the Continent.

MECHANICAL DRAWINGS.

chanical and Architectural Drawings executed in all kinds of Perspective, with dispatch and at moderate prices. yon Row, No 5, opposite City Hall. May 29—tf

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C. G. SHEFFIELD,

URBANA, OHIO,

COMMISSION AGENT,

FOR THE

le of Mechanical and Agricultural Machinery,

IN THE WESTERN AND SOUTH-WESTERN STATES.

And such other Patented Articles

As are suited to the wants of the Mississippi Valley.

business residence of sixteen years in the WESTERN STATES, a very extended acquaintance in all of the al Western Cities, with the assistance of TRAVELING AGENTS, will offer to Eastern Manufacturers and ers unusual facilities through this Agency,

FIRST PREMIUM PIANO-FORTES.

WOODWARD & BROW

387 *WASHINGTON STREET, BOSTON.*

WOODWARD & BROWN were awarded the FIRST PREMIUM for their Pianos at the last Great Exhibition in Boston by the Massachusetts Charitable Mechanics' Association. Their competitors being the most distinguished American, including the late Mr. Jonas Chickering, President of the above Association, to whom was assigned the ...

W. B. also received the FIRST PREMIUM at the Worcester County Fair, held in the city of Worcester, over ... thus incontestibly proving the great superiority of their Piano-fortes. And in addition to this, they have received ... ing testimonials from various Institutions for the unrivaled excellence of the Instruments manufactured and exhibi...

Encouraged by such opinions from the best judges in the country, and aided by *twenty years experience*, ... dently invite purchasers and dealers to inspect their stock before making selections. Every instrument warranted ... satisfaction, or the purchase money refunded.

☞ Second-hand Pianos taken in exchange.

AGENTS.—Safford & Brother, 369 Broadway, N. Y.; John H. Mellor, Pittsburgh, Pa.; Colburn & Field, ... James Turpin, Dayton, O.; Willard, Stowell & Willard, Indianapolis, Ind.; F. L. Ristey, Albany, N. Y.; J. F. ... Md.; L. S. Rust, Burlington, Vt.; E. S. Nason, Worcester, Mass.; Danforth, Lyon, Providence, R. I.; Foster and Fob, ...

Sept. 1y

BRIGGS & VICKERE,

MANUFACTURERS OF

Plain, Ornamental & Enameled Chamber Furni...

WHOLESALE AND RETAIL,

NO. 6 Sullivan Street, near Canal, New-York.

In offering, for the patronage of the public, goods of our own make, we feel confident of that success which industry ... and an honesty of purpose, that offers only good and warrantable articles, always merits, simply asking of all ... purchase to call and judge for themselves.

GEORGE ...
WM. VIC...

Nov., 53, 1yr. N.B. Dealers supplied on liberal terms, and orders promptly attended to.

PREPARED SUPER PHOSPHATE OF LIM...

BY THE UNION CHEMICAL WORKS, L. I.

HOYT & CO., AGENTS,

No. 194 Water Street, adjoining the U. S. Hotel, New-York.

A FERTILIZER of the most approved quality, producing all the immediate effect of the best Peruvian Guano, with ... vantage of being much more lasting in the soil. Thoroughly tested, and found to more than realize the expectations of ... who have already tried it. The best evidence of this is the largely increased demand this season over the past year. ... bags of 160 lbs.; barrels 250 lbs. each. Buyers will please be particular to observe our brand upon each bag or barrel. ...

Also for sale, American and Foreign Field and Garden Seeds. English Ray Grass, Foul Meadow Grass, fine mixed L... White Clover, Osage Orange, &c.

Nov., ...

ANDREWS & JESUP

No. 67 PINE STREET, New-York,

COMMISSION MERCHANTS,

FOR THE SALE OF ALL KINDS OF

COTTON & WOOLLEN MACHINERY

MACHINIST'S TOOLS, LEATHER BELTING, &C.; BROKERS IN DYE-WOODS, DYE-STUFF... AND OILS. ALSO, IMPORTERS AND DEALERS IN EVERY VARIETY OF

Oct. 1 year. MANUFACTURERS' ARTICLES.

UNION AGRICULTURAL WAREHOUSE AND SEED STORE.

RALPH & CO.,

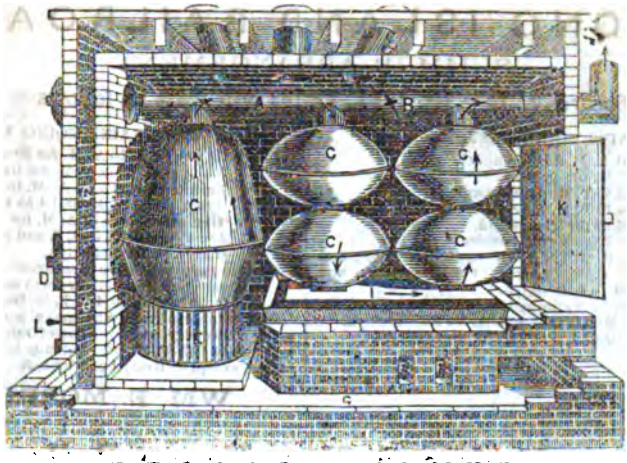
23 *FULTON STREET, New-York,*

Offer for sale a large and select assortment of Agricultural and Horticultural Implements, consisting of Plows and Castings, Corn Shellers, Straw Cutters, Horse Powers, Threshers and Separators, Fanning Mills, Grain Cradles, Scythes and Snaths, Grain Mills Sugar Mills, Root Cutters, Sausage Cutters and Stuffers, Ox Yokes and Bows, Rakes, Hoes, Hay and Manure Forks, Spades, Shovels, Carts, Waggons, Wheelbarrows, &c.

Field, Garden and Flower Seeds.—A large va... riety. **Fertilizers**—Peruvian Guano, Super-Pho... Lime, Bone Dust, Poudrette, Charcoal Dust, Plaster, &c...

Manufacturers of SCHNEBLY'S Rapi... Mowing Machine; **DANIEL'S** Hay, Straw and Sto... ters. Agents for the sale of Wm. Hovey's Patent Straw C... A descriptive catalogue will be sent on application by ma...

Oct. '53, 1y.



Warming Furnace.

GEORGE WALKER,

R*MING AND VENTILATING WAREHOUSE,*

No. 77 WHITE STREET,

NEAR BROADWAY, N. Y.

PATENT MIRROR MANTELS,

erson's Patent Corresponding Ship Ventilators,

EMERSON'S PATENT HOUSE AND CAR VENTILATORS,

POND'S IMPROVED COOKING RANGE.

Dec. 1y.

FALL OF 1858.

AT CENTRAL THROUGH LINE TO THE WEST!

☞ CARRYING THE GREAT WESTERN MAIL.

BALTIMORE AND OHIO RAILROAD,

From Baltimore to Wheeling, through in 18 hours!

Tunnels all completed, and Road in fine order.

EXPRESS MAIL TRAIN leaves Baltimore at 7 P. M. daily, on arrival of the 9 A. M. Train from New proceeds directly through,—or Passengers leaving New York at 5 30 P. M., and Baltimore at 8 A. M., may lodge in nd, and proceed thence in the morning to *Wheeling, where they arrive at* 1 *P. M.*
ge checked through to Wheeling, and NO CHARGE *for Transfer of Passengers or Baggage.*
assengers will not fail to observe that this is THE CHEAPEST, as well as one of the most pleasant routes to the West.

FARE BY THROUGH TICKET,

BY RIVER FROM WHEELING, WITH THE RIGHT TO LIE OVER ON THE ROUTE.

From New York to	Cincinnati	- - -	$13 50	To Louisville,	- - -	$14 50
Philadelphia to	do.	- - -	11 00	To do.	- - -	12 00
Baltimore to	do.	- - -	10 00	To do.	- - - -	11 00
Washington to	do.	- - -	11 00	To do.	- - - -	12 00

dditional charge on board of the Boats for *Meals and State Rooms* of only $2 to Cincinnati—$3 to Louisville.

BY LAND ROUTE FROM WHEELING, &c.

From New York to	Columbus,	- - -	$15 62	To Cincinnati,	- - -	$18 62
Philadelphia to	do.	- - -	13 30	To do.	- - -	16 30
Baltimore to	do.	- - -	12 30	To do.	- - -	15 00
Washington to	do.	- - -	13 00	To do.	- - -	16 00

HROUGH TICKETS and general information apply at the following places:

YORK, to J. L. SLEMMER, *cor. Park Place and Broadway, opposite the Park and one block above the Astor House.*
ADELPHIA, to MR. BLACKWELL, *Library St.*, or to the TICKET SELLER at Balt. R. R. Station, *Broad & Prime Sts.*
TIMORE, to *J. T.* ENGLAND, *at Baltimore and Ohio Railroad Station.*
SHINGTON, to T. H. PARSONS, *Agent at Railroad Station.*

WASHINGTON BRANCH.

AVE BALTIMORE at	- - - - -	4 15 A. M.	LEAVE WASHINGTON, for Balt. at	-	6 A. M.
Do. do.	- - - - -	9 A. M	Do. do. do.	- -	8 A. M.
Do. do.	- - - - -	3 30 P M.	Do. do. do.	- -	3½ P. M.
Do. do.	- - - - -	7 P. M.	Do. do. do.	- -	5 P. M.
n *Sunday* at	- - - - -	4 15 A. M.	*On Sunday* at	- -	6 A. M.
o .	- - - - -	6 10 P. M.	Do.	- -	5 P. M.

RST and FOURTH Trains from Baltimore, and the SECOND and FOURTH Trains from Washington, will be Express Mail Trains—stopping only at Washington Junction and Annapolis.

LONG ISLAND RAILROAD.

SUMMER ARRANGEMENT.

On and after Saturday, July 1st, 1854, Trains will start as follows—

TRAINS GOING EAST.

Leave Brooklyn at 10 A. M. for Greenport.
" " 12 M. for Syosset.
" " 3.45 P. M. for Yaphank.
" " 4.15 P. M. for Syosset.
" " 6 00 for Hempstead.
" " 7.30 P. M. for Jamaica.

On Saturday, the 3.45 P. M. Train will run to Greenport, and leave Greenport at 4.30 A. M. Monday. On Wednesdays and Saturdays the 7.30 P. M. for Brooklyn.

Jamaica train will run to Farmingdale, and leave Farmingdale on Thursdays and Mondays at 4.25 A. M. for Brooklyn.

Freight Train leaves Brooklyn at 7 A. M. for Greenport.

TRAINS GOING WEST.

Leave Greenport at 10 A. M. for Brooklyn.
" Yaphank at 6.03 A. M. for Brooklyn.
" Farmingdale at 7.30 A. M. for Brooklyn.
" Syosset at 7 A. M. and 4.55 P. M. for Brooklyn.
" Hempstead at 6.20 A. M. for Brooklyn.
" Jamaica at 5.40, 7.08, 8, and 8.45 A. M., 6 22 P. M. for Brooklyn.

Freight train will leave Greenport at 7 A.M.

On Hempstead branch, cars will connect with trains, except the one at 4.15 P. M. from Brooklyn.

The Yaphank train will make no stops going either way, and the Syosset train into Brooklyn and out at 4.15 P. M., will not stop between Jamaica, except at Hempstead branch.

WM. H. MORRIS, Pres

New York and New Haven Railroad.

SUMMER ARRANGEMENT—1854. COMMENCING MAY 15, 185

TRAINS FROM NEW YORK.

For New Haven—Accommodation—At 7 and 11 30 A. M. and 4 10 and 5 15 P. M. The 4 P. M. train is Express to Greenwich.

Express—At 8 A. M., 3 and 4 P. M. The 8 A. M. train stops at Stamford and Bridgeport; the 3 P. M. at Stamford, Norwalk and Bridgeport; the 4 P. M. at Stamford.

For Port Chester and Norwalk—Special Accommodation Trains—At 8 45 A. M. & 6 30 P. M. for Norwalk, & 1 30 P. M. & 4 20 P. M. for Port Chester.

For Boston, via Hartford, Springfield & Worcester—Express—At 8 A. M. and 4 P. M. Dine and sup at Springfield.

For Connecticut River, Vermont Railroads, and Montreal—Express—At 8 A. M. Dine at Springfield.

For Accommodation Trains of the New Haven, Hartford and Springfield Railroads—At 11 30 A. M. & 3 P. M.

For Canal R. R.—At 8 A. M. and 11 30 A. M.

For New Haven and New London Railroad—Express at 8 A. M. to New London, Norwich, Stonington and Providence, and 3 P. M. to New London only.

For Housatonic R. R.—Express—At 8 A. M.

For Naugatuck R. R.—Express—At 8 A.M. and 1

For Danbury and Norwalk R. R.—Accommodation 8 45 A. M., and Express at 4 30 P. M.

TRAINS TO NEW YORK.

From New Haven—Accommodation—At 5 30, 6 A. M. and 4 20 P. M.

Express—At 9 25 A. M. and 1 10, 1 50, & 9 25 P. M.

From Norwalk and Port Chester—Special Accom Trains from Norwalk, at 6 A. M.; from Port Ches A. M., and 3 50 P. M.

See large bill of advertisement at the Station H Hotels.

JAS. H. HOYT, Superintendent.

Vice Pres't. and Supt.'s Office, 27 Canal Street, N. Y

Ass't Supt.'s Office, Station House, New Haven.

NEW YORK AND ERIE RAILROAD.

PASSENGER TRAINS LEAVE PIER FOOT OF DUANE-ST., AS FOLLOWS:

Trains leave Pier foot of Duane St., as follows, viz:

Buffalo Express, at 6 A. M. for Buffalo direct, without change of bagrage or cars.

Dunkirk Express at 7 A. M., for Dunkirk.

Mail at 8 15 A. M. for Dunkirk and Buffalo, and intermediate stations.

Way Express at 12 45 P. M. for Dunkirk.

Rockland, Passenger, at 3 P. M. (from foot of Chambers-st.,) via Piermont, for Suffern and intermediate stations.

Way Passenger, at 4 P. M. for Otisville and int stations.

Night Express at 5 P. M. for Dunkirk and Buffalo.

Emigrant Train at 6 P. M.

On SUNDAY only one Express Train, at 6 P. M.

These Express Trains connect at Buffalo with first-cl did steamers on Lake Erie for all ports on the Lak Dunkirk with the Lake Shore Railroad for Cleveland nati, Toledo, Detroit, Chicago, &c.

D. C. McCALLUM, General Superint

REGULAR UNITED STATES MAIL LINE

FOR BOSTON, WORCESTER, LOWELL, FITCHBURG, NASHUA, CONCORD, BELLOWS FALLS, &c., &c., vi and Worcester, Worcester and Nassau, Boston and Worcester, New-London and Willimantic, and Palmer Railroads.

Passengers by this line leave pier No. 18, North River, foot of Courtlandt street, every day at 5 o'clock P.M., (Sun cepted.)

Steamer CONNECTICUT, Captain J. W. Williams, will leave New-York every Tuesday, Thursday and Friday.

Steamer WORCESTER, Captain William Wilcox, will leave New-York every Monday, Wednesday and Friday.

Passengers by this line arrive in time to save the early trains out of Boston.

An express freight train leaves Allyn's Point for Boston immediately on the arrival of the steamboats.

Passengers taken at the lowest rates for New-London, Norwich, Willimantic, Stafford, Munson, Palmer, Worcester, Fitchburg, Lowell, Lawrence, Nashua, Concord, Bellows Falls and other places in Northern New-Hampshire and Vermont. taken at the lowest rates.

For further information inquire of F. S. MARTIN, at the office on Pier 18, North River, foot of Courtland street.

No freight received after 4½ o'clock P. M.

NASSAU STREET
ASH TAILORING ESTABLISHMENT,

CLOTHING AND OUT-FITTING STORE.

J. D. PRICE,

80 NASSAU STREET,

s his friends and the public to give him a call, either to leave their measure to be made to order from l selected stock of

CLOTHS, CASSIMERES, AND VESTINGS,

Of the Newest Style and most Fashionable Patterns,

Or to select from a large stock of

READY-MADE GARMENTS,

MADE IN THE MOST FASHIONABLE STYLE AND BEST WORKMANSHIP.

ALSO, A STOCK OF

Shirts, Cravats, Gloves, Hosiery, etc., etc.,

All of which are offered for sale at the lowest possible prices, for Cash. CALL AND SEE.

J. D. PRICE, 80 Nassau Street.

☞ *N. B.—Do not mistake the name, as there are two stores No.* 80 *in the same street.* 1t

---

CHEAPEST FURNITURE ESTABLISHMENT
IN NEW-YORK.

WM. SIMPSON.

89 BOWERY, NEAR HESTER ST.,

WHOLESALE AND RETAIL MANUFACTURER OF

SUPERIOR ROSEWOOD, MAHOGANY,

AND OTHER FURNITURE.

Constantly on hand, FINE ROSEWOOD PARLOR FURNITURE, frames of the latest patterns, which he will furnish in any style, in suits from $150 and upwards, covered with plush, velvet, brocatelle, moquete, or any other materials parties may require.

Also a general assortment of SUPERIOR FURNITURE, which he has made under his own superintendence, and at much LOWER PRICES than can be met with elsewhere, as he buys all his materials for CASH, and employs none but the best workmen.

Those about Furnishing are respectfully invited to call and examine HIS STOCK, before purchasing elsewhere—

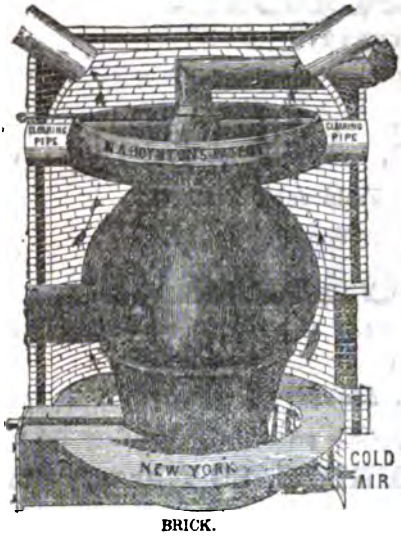
89 Bowery, near Hester Street,

Where COUNTRY MERCHANTS would find it greatly to their advantage to call before making their selection.

N.B.—UPHOLSTERY in all its branches attended to on the shortest notice, and done in the latest and best style. Private dwellings, public buildings, churches, hotels, ships and steamboats fitted up with punctuality and despatch, under the direction of L. S. SCHAEFER, one of the oldest and most experienced practical upholsterers in the city.

N. A. BOYNTON'S
VENTILATING HEATER.

PATENTED, 1853.



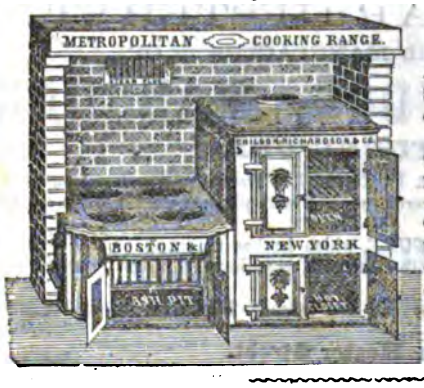
BRICK.

FOUR SIZES FOR BRICK WORK; FIVE SIZES PORTABLE.

PORTABLE.

An entirely new Article, possessing advantages worthy the attention of those in want of a Powerful and Economical Heater.

SIMPLE in construction, compact in FORM, and easily managed and cleaned.
Is entirely of **Cast Iron**; has but *two joints*, and those so arranged, as to prevent the escape of Gases and Smoke.
The **Fire Pot** is lined, the **Radiating Surface** located above the fire, and equally exposed on all sides to the action of the cold air.
Can be set in **Low Cellars**, and, by the attachment of a **Self-Clearing Radiator** is especially fitted for the use of BITUMINOUS COAL.
Of the above pattern we have four sizes, to be enclosed in brick-work, and five sizes of portables, adapted to all classes of buildings, and can be furnished at a less price than any other heaters of equal capacity in present use.



METROPOLITAN COOKING RANGE.

A NEW and SUPERIOR ARTICLE. Embracing all the modern improvements, equally fitted for the use of ANTHRACITE or BITUMINOUS COAL, COKE, or WOOD.

By burning its fuel in a thin stratum over a large surface, and having its EXTRA, LARGE OVEN elevated to a level with the top of the fire chamber, heated by the upward NATURAL DRAFT, and having a revolving grate that clears the fire chamber, without dust, and a powerful water-back, affording Hot Water for all purposes, with a provision for Hot Air Fixtures for heating other rooms, without extra fuel—it becomes at once the most convenient and economical range in use.

Examinations respectfully solicited.

MANUFACTURED AND FOR SALE, WHOLESALE AND RETAIL, BY

RICHARDSON & BOYNTON,

(Successors to CHILSON, RICHARDSON & Co.),

374 Broadway, New-York.

THE GREEK SLAVE!

BACCHANTE, VENUS, FLORA, HEBE, AND THE DANCING GIRL.

THE above celebrated Statues, together with FIFTEEN STATUETTES IN BRONZE, and several hundred MAGNIFICENT OIL PAINTINGS, form the collection of prizes to be distributed among the members of the Cosmopolitan Art Association at the first annual distribution, in January next.

THE COSMOPOLITAN ART AND LITERARY ASSOCIATION,

Organized for the Encouragement and General Diffusion of Literature and the Fine Arts on a new and original plan.

This popular Art Association is designed to encourage and popularize the Fine Arts, and disseminate wholesome Literature throughout the country. A Gallery of Art is permanently founded, and will contain a valuable collection of Paintings and Statuary, for the annual distribution of each year. The best Literature of the day will be issued to subscribers, consisting of the popular Monthly Magazines, Reviews, &c.

The Committee of Management have the pleasure of announcing that the First Annual Distribution will take place on the 30th January next, at which time will be distributed or allotted to members several hundred Works of Art, among which is the original and world-renowned statue of the GREEK SLAVE, by HIRAM POWERS, *costing over five thousand dollars*, together with the beautiful Statues of VENUS, BACCHANTE, HEBE, FLORA, and the DANCING GIRL; and fifteen Statuettes in Bronze, imported from Paris; also, a large collection of OIL PAINTINGS, comprising some of the best productions of celebrated American and Foreign Artists.

The Literature issued to subscribers consists of the following Monthly Magazines: *Harper's, Putnam's, Knickerbocker, Blackwood's, Graham's, Magazine of Art,* and *Godey's Lady's Book*, and the Quarterly Reviews reprinted in New-York: *Edinburgh, Westminster, London Quarterly,* and *North British.*

PLAN FOR THE CURRENT YEAR, 1854-5.

The payment of three dollars constitutes any one a member of this Association, and entitles him to either one of the above Magazines for one year, and also to a ticket in the distribution of the Statuary and Paintings, which are to be allotted to members in January.

Persons taking five memberships are entitled to any five of the Magazines one year, and to *six tickets* in the distribution.

Persons, on becoming members, can have their Magazine commence with any month they choose, and rely on its being mailed to them promptly on the first of every month, direct from the New-York and Philadelphia Publishers.

LITTELL'S LIVING AGE, *Weekly*, is furnished one year and two memberships for $6.

The net proceeds derived from the sale of memberships are devoted to the purchase of Works of Art for the ensuing year.

Books open to receive names at the Eastern office, New-York, or Western office, Sandusky.

The Gallery of Art is located at Sandusky, (the Western office of the Association,) where *superb Granite Buildings* have been erected for it, and in whose spacious saloons the splendid collection of Statuary and Paintings are exhibited.

The advantages secured by becoming a member of this Association are—

1st. All persons receive the *full value of their subscription at the start*, in the shape of sterling Magazine Literature.

2d. Each member is contributing toward purchasing choice Works of Art, which are to be distributed among themselves, and are at the same time encouraging the Artists of the country, disbursing thousands of dollars through its agency.

Persons in *remitting funds* for membership, will please give their *post-office address in full*, stating the month they wish the Magazine to commence, and write the word "*Registered*" on the envelope, to prevent loss, on the receipt of which, a certificate of membership, together with the magazine desired, will be forwarded to any part of the country.

Those who purchase Magazines at Book-stores will observe that by joining this association, *they receive the Magazine and Free Ticket in the annual distribution*, all at the same price they now pay for the Magazine alone.

Persons subscribing any time before the 30th of January, are entitled to the Magazines for 1855.

CLOSING OF THE BOOKS.

Subscriptions will be received up to the 30th January, at which time the distribution will take place.

ILLUSTRATED DESCRIPTIVE CATALOGUES of the whole collection to be distributed, will be sent free of charge on application.

☞ Offices of the Association, at the Knickerbocker Magazine office, 348 Broadway, New-York, and at No. 166 Water street, Sandusky, Ohio. Address, (at either office,) for memberships,

C. L. DERBY, Actuary C. A. & L. A.

CLOSING OF THE BOOKS.

ARE YOU A MEMBER?

ALL PERSONS wishing to become members of the Cosmopolitan Art Association, in order to receive their Magazines for 1855, and a ticket in the great distribution, will lose no time in forwarding $3, the subscription, at once, as the Books will close and the Distribution take place the 30th of January.

For full particulars, see illustrated Catalogues, which are sent free, on application, to all parts of the country.

Address **C. L. DERBY, Actuary, C. A. & L. A.**

Knickerbocker Magazine Office, 348 Broadway, New-York, or 166 Water st., Sandusky, O.

ARE YOU A MEMBER?

ON THE 30TH OF JANUARY, the Cosmopolitan Art Association will distribute among its members the large and magnificent collection of Paintings and Statuary contained in their Galleries.

Memberships, $3, entitle any one to a $3 Magazine for 1855, and a ticket in the above Distribution. Subscriptions received up to the day of distribution.

Illustrated Catalogues, giving full particulars, sent to all parts of the country free.

☞ Office of the Association, at the Knickerbocker Magazine office, 348 Broadway, New-York, and at No. 166 Water street, Sandusky, Ohio. Address (at either office)

C. L. DERBY, Actuary, C. A. & L. A.

PHALON'S PAPHIAN LOTION,

OR,

FLORAL BEAUTIFIER,

INFALLIBLE AS A PRESERVATIVE OF

The Skin and Complexion,

AND AS A MEANS OF ERADICATING OR CURING

Freckles, Tan, Pimples, Chapped Hands, Lips, and Face, Blotches, Sun Burns, Scalds, Burns, etc. and all Diseases appertaining to the Skin.

Phalon's Paphian Lotion.

The most brilliant addition to the toilet which the present age has witnessed, was the fortunate discovery of a distinguished physician and Orientalist, who obtained the knowledge of its ingredients, and the method of combining them, while traveling in India. The receipt or secret was purchased for $2,500 by EDWARD PHALON, who, in the course of a long series of experiments, has so enriched, improved, and perfected the preparation, as to insure its reception as an indispensable and unequaled article for the toilet throughout the civilized world.

To describe,

or even to enumerate, all the instances in which this peerless beautifier may be recommended as an unfailing specific, would occupy a volume; suffice it to state, that among its most important properties, is the power to improve a harsh, pallid, bronzed, mottled, or otherwise repulsive COMPLEXION, and to substitute the fascination of a delicate and dazzling white, alternating with a roseate bloom. Perhaps the blush that beautifies the inner surface of an ocean shell, will give the best idea of the rich transparent tint which it imparts to the cheeks, while no pearl can surpass the exquisite fairness which it confers upon the neck, hands, and arms.

Its Efficacy

in counteracting all injurious effects arising from exposure to the weather and change of climate, would be deemed incredible if it were not authenticated by the highest testimony. Neither the freezing blast of the north, nor the blazing heat of the south can destroy or impair the beauty of a complexion protected by the regular application of the PAPHIAN LOTION.

Fair Complexions

are always peculiarly susceptible of inflammatory influences. Over exertion in warm weather frequently produces those unpleasant and irritating eruptions known as rose-rash, nettle-rash, and prickly heat, on the face, neck, and arms of the most beautiful blonde, and if not promptly attended to, may leave a permanent blemish behind. The cooling, healing, and balmy effect of the PAPHIAN LOTION is truly wonderful in cases of this kind. It does not drive in the eruption, but gives activity to the porous system, and causes the inflammatory principle or virus to exhale by insensible evaporation.

Ladies,

who, while nursing, suffer from sore or inflamed nipples, will find immediate and unfailing relief from the use of the PAPHIAN LOTION, which, from its extraordinary power to allay irritation and cool the mouth, may be truly said to render pleasing and painless, both to mother and babe, the most delightful task imposed by maternal duty. It is not, therefore, to be considered one of the mere conventional appendages of the nursery, but as an article of the first necessity in that department, and one that no wise and prudent mother will omit from her list of indispensables for her infant and herself.

Chapped Hands and Lips.

One of the most painful consequences of severe weather to ladies and children, is the chapping or cracking of the skin of the hands. It is a painful and annoying drawback to the amusements of the gay winter season, interfering with the enjoyment of many a sleigh-ride, and marring the pleasure of many a social evening by the excessive irritation which it occasions. Upon chapped, as also upon all roughness and exfoliations of the skin, occasioned by cold, the PAPHIAN LOTION acts like a charm, soothing and healing the inflamed and abraded surface, softening the indurated cuticle, and restoring its flexibility and transparency.

The Nursery.

To pass over in silence the peculiar adaptation of this balsamic fluid to the use of children and the purposes of the nursery, would be an act of unkindness to the mothers of our land. As a wash for infants, it cannot be too highly recommended. It promotes a healthy tone in the minute superficial vessels, so apt to become torpid in infancy; and has a soothing, cooling effect upon the tender and sensitive skin. Being not only perfectly innocuous, but eminently hygeian in its nature, it may be used by the most delicate lady, or applied to the most feeble child, with perfect confidence in its harmlessness and salutary effect. It imparts a silky texture to the young and tender skin, and protects it against detriment from external influences.

It is better,

however, to preserve intact the smoothness and beauty of the skin, than to reproduce them after they have been partially destroyed by a low temperature; and as the chapping of the hands may be effectually prevented by the use of the Lotion at the morning and evening toilet, it is desirable that ladies should thus fortify their delicate fingers in advance against the trenchant blasts of winter.

To Gentlemen

who suffer from tenderness and smarting of the face after shaving, PHALON'S PAPHIAN LOTION will prove a most welcome addition to the comforts and luxuries of the toilet; as it alleviates the irritation and pain, and renders the shaven surface soft and pliable.

LETTER FROM JAMES R. CHILTON, Chemist.

I have analyzed the "Paphian Lotion" used for beautifying the complexion, manufactured by Mr Phalon, and find it to be a harmless preparation, and not in any way injurious to the skin.

I believe it will be found serviceable for the purposes it is intended. JAMES R. CHILTON,

To EDWARD PHALON, Esq. } Chemist,
New-York, Dec. 19th, 1853. } 87 Chambers st.

LETTER FROM MADAME ANNE THILLON.

TO EDWARD PHALON, Esq.—DEAR SIR—If you think my opinion of your "Paphian Lotion" will have any weight with the public, it is I am sure, very much at your service. I have used the preparation for some months past, and find it infinitely the most efficacious and agreeable cosmetic that ever graced my toilet.

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June, 1y.

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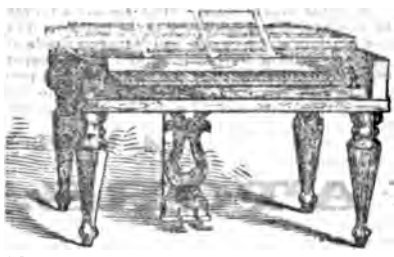

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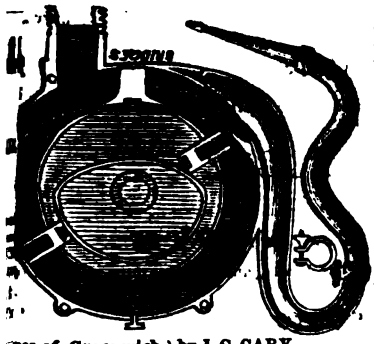

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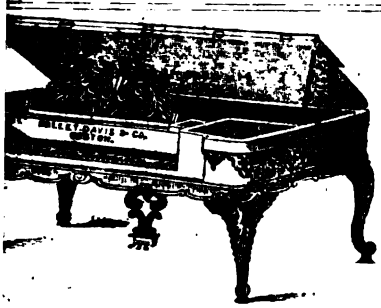

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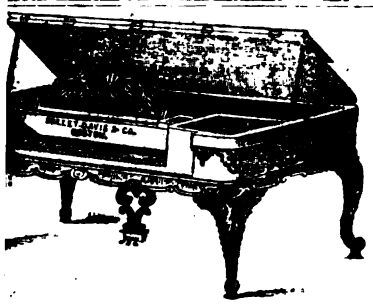

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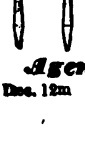

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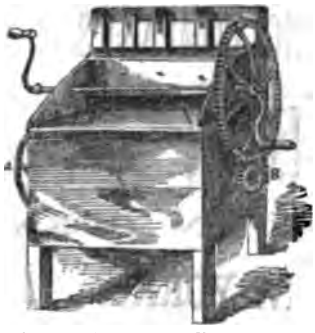

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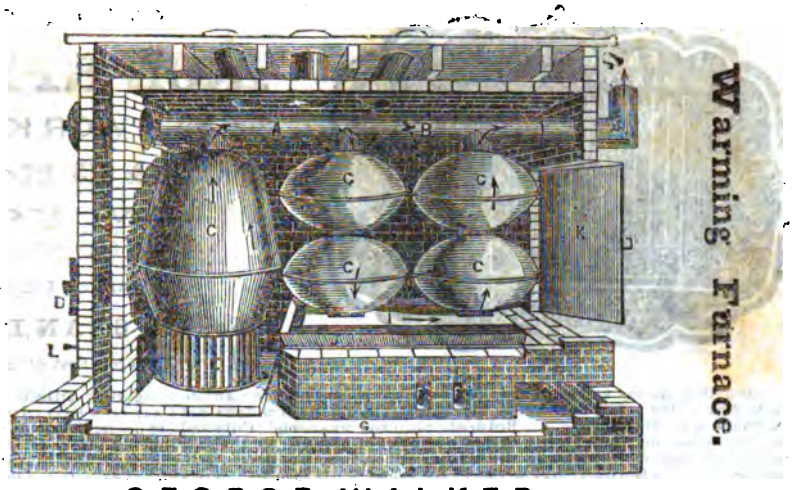

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...XPRESS MAIL TRAIN leaves Baltimore at 7 P. M. daily, on arrival of the 9 A. M. Train from New ...roceeds directly through,—or Passengers leaving New York at 5 30 P. M., and Baltimore at 8 A. M., may lodge in ..., and proceed thence in the morning to *Wheeling, where they arrive at* 1 *P. M.*

...e checked through to Wheeling, and NO CHARGE *for Transfer of Passengers or Baggage.*

...assengers will not fail to observe that this is THE CHEAPEST, as well as one of the most pleasant routes to the West.

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BY RIVER FROM WHEELING, WITH THE RIGHT TO LIE OVER ON THE ROUTE.

From New York to	Cincinnati	- -	$13 50	To Louisville,	- - -	$14 50
Philadelphia to	do.	- - -	11 00	To	do.	- - - -	12 00
Baltimore to	do.	- - -	10 00	To	do.	- - - -	11 00
Washington to	do.	- - -	11 00	To	do.	- - - -	12 00

...additional charge on board of the Boats for *Meals and State Rooms* of only $2 to Cincinnati—$3 to Louisville.

BY LAND ROUTE FROM WHEELING, &c.

From New York to	Columbus,	- - -	$15 62	To Cincinnati,	- - -	$18 62
Philadelphia to	do.	- - -	13 30	To	do.	- - - -	16 30
Baltimore to	do.	- - -	12 30	To	do.	- - - -	15 00
Washington to	do.	- - -	13 00	To	do.	- - - -	16 00

THROUGH TICKETS and general information apply at the following places:

...W YORK, to J. L. SLEMMER, *cor. Park Place and Broadway, opposite the Park and one block above the Astor House.*

...ILADELPHIA, to MR. BLACKWELL, *Library St.*, or to the TICKET SELLER at Balt. R. R. Station, *Broad & Prime Sts.*

...LTIMORE, to J. T. ENGLAND, *at Baltimore and Ohio Railroad Station.*

...ASHINGTON, to T. H. PARSONS, *Agent at Railroad Station.*

WASHINGTON BRANCH.

LEAVE BALTIMORE at	- - - -	4 15 A. M.	LEAVE WASHINGTON, for Balt. at	-	6 A. M.
Do.	do.	- - - - -	9 A. M.	Do.	do.	do.	- -	8 A. M.
Do.	do.	- - - - -	3 30 P. M.	Do.	do.	do.	- -	3½ P. M.
Do.	do.	- - - - -	7 P. M.	Do.	do.	do.	- -	5 P. M.
On Sunday at	- - - - -	4 15 A. M.	*On Sunday* at	- -	6 A. M.
Do	- - - - -	6 10 P. M.	Do.	- -	5 P. M.

...RST and FOURTH Trains from Baltimore, and the SECOND and FOURTH Trains from Washington, will be Express Mail Trains—stopping only at Washington Junction and Annapolis.

GLOBE IRON RAIL WORKS,

Nos. 311 & 313 Monroe St

NEW-YORK,

Opposite the Allaire Works

SALES ROOM,

No. 122 GRAND STREET

Five doors East of Broadway.

The Subscribers having extensive and unsurpassed arrangements for manufacturing every article in their line are prepared to offer to the public and dealers throughout the country WROUGHT and CAST IRON RAILING of every description, Gratings, Shutters, Doors; Portable Iron Bedsteads, plain and ornamental; Cribs and Cradles for Children; Iron Chairs, Wash Stands, Flower and Work Stands, Umbrella and Hat Stands, &c., &c.; also, a superior quality of Iron Farm Fence, of which they will warrant to surpass in strength, durability, beauty of design, and cheapness, the manufactures of any House in their line. Orders from every section of the United States thankfully received, and executed with the utmost dispatch.

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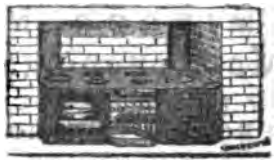
115 BLEECKER ST. New-York,



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PATENT COOKING RANGE,

This is the best Range in use for baking and boiling, and it works with half the fuel that others use. A great advantage is gained by passing the draft direct from the fire to the bottom of the oven, and by having a flue chamber on the syphon principle between the fire and the oven, which so regulates the heat that it is alike on all sides alike. This Range is heavier than any other of its size, of extra material, and sold only by the manufacturer, 115 BLEECKER STREET, N. Y. F. S. MERRITT.

Oct. '53. 1 year.

Watches, Jewelry and Gold Pens.

IMPORTANT TO PURCHASERS ON BROADWAY.

The great objection to buying no this great and splendid thoroughfare is, that prices are unknowingly higher than in other localities in the city, although the goods are known to be of the first quality.

WILLMARTH & BENTON

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This store being a branch of their extensive manufacturing business already established, and Importing what they do not manufacture, enables them to compete successfully with any locality, and to warrant their goods to be as recommended.

Please call and examine, especially our *Diamond Stock and Fine Watches*, before purchasing elsewhere.

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Claim and General Agency Office,

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The undersigned (both late of the Post Office Department) have formed a co-partnership for the practice of and the prosecution of Claims before the Executive Departments or Congress.

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By the recent law of Congress, all officers, marines, and sailors of the United States Navy, and officers and men of the Revenue Service, who served in the Pacific, on the coast of California, during the Mexican war, or at any time from 1846 to 1852, are entitled to extra pay. In case of the death of any of the above, the heirs can obtain the same.

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193 FRONT STREET, N. Y.

THERE may be found a complete assortment of Agricultural Implements, embracing all the new and most approved styles. Ploughs, of every description, among which are

Moore's Celebrated Premium,

EAGLE," "PEACOCK," HALL'S STEEL AND BAR-SHARE, MINOR, HOVTON & CO.'S," "DIAMOND PATTERN," CENTRE DRAUGHT," &c., &c.

STRAW CUTTERS,—Patent Self Sharpening Straw Cutter, the best article in use; also "Hovey's," "Sinclair's," Greene's," and a variety of other Cutters in general use.

Corn Shellers, Fanning Mills, Horse Powers, Threshing Machines, Corn and Cob Mills, Rakes, Hoes, Shovels, Spades, Hay Forks, Manure Forks, &c., &c.

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Copper, Brass and Iron Wire Cloth.

All of which will be warranted to be of the best quality and sold at the lowest prices.

JOHN MOORE, 193 Front Street.

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PATENT REACTION CENTRIFUGAL PUMP AND FIRE ENGINE.

Adapted to any situation; unlimited in power; certain in action; permanent in use; and, withal, so low in cost, that they are rapidly superseding all others. Call and be satisfied of these facts at the office and warehouse of the UNION POWER COMPANY of U. S., No. 33 Broadway; removed from No. 24, opposite present stand.

June, tf

BLAKE'S PATENT FIRE PROOF PAIN

The original and only article that can be sold without infringing the patent, will at all times be kept, both ge... and in Dry Powder, at 119 PEARL STREET, by the Patentee.

The Patent has just been decided in the United States Court to be good and valid.

In consequence of this decision throwing the entire business into my hands, I shall very materially enlarge... can manufacture a large quantity much cheaper, proportionally, than a small one. All infringers will be prosecuted...

June, 1y. **WM. BLAKE, Patentee, 119 Pearl Street, N...**

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WALLING & HEDGES, No. 252 Ninth Avenue,

Are now manufacturing and offer for sale a new article in the furniture line, combining the desk, table and chair, ... thing ever before offered to the public, being, when closed up, a fancy centre table, and when opened, a cushioned ... with desk and writing materials complete, the opening or closing of which requires but one second. This unique ... furniture must soon come into general use, as it is well adapted to the parlor, the sitting-room, library, office, school-room, ... rooms, council chambers, legislative halls, for students, reporters, &c. The examination of the article by a discerning ... is particularly solicited. The trade supplied. N. B.—Patent right secured.

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PATENT BURRING MACHINES.

The subscriber, who is the inventor of the

BURRING MACHINES

which are attached to Carding Machines, informs

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that he has increased facilities for manufacturing superior Burring Machines, and likewise for Second Breakers. In addition to which, manufacturers who prefer the metal cylinder, invented by J. L. Tuttle, may be supplied with them at ... notice.

The subscriber is giving his personal attention to the ... manufacture of these Machines, which he has not done before.

The legal right for building these Machines is in the subscriber.

Orders addressed to HAYES & RENFIELD, No. ... Street, will meet with prompt attention.

S. R. PARKHURST.

New York, January 17, 1854. ...

WATER WHEELS.

THE Subscribers offer for sale "Jagger's Improved Breast Turbine Water Wheel," which they believe to be unrivalled. Circulars and Tables relating to the same may be obtained at this office, or will be forwarded to any one desiring them.

JAGGER, TREADWELL & PERRY,

Nov. 13-tf. No. 110 Beaver street, Albany, N. Y.

ATKINS' SELF-RAKING REAPER.

40 OF these machines were used the last harvest in grass or grain, or both, with almost uniformly good success, in nine different States and Canada.

TWENTY-SIX PREMIUMS,

including two *at the Crystal Palace*, (silver and bronze medals,) were awarded it at the autumn exhibitions. I am building only 300, which are being rapidly ordered. Mr. Joseph Hall, Rochester, N. Y., will also build a few.

☞ Early orders necessary to insure a reaper.

Price at Chicago $175—$75 Cash with order, note for $50, payable when reaper works successfully, and another for $... payable 1st December next, with interest. Or $160 cash ... advance.—*Warranted to be a good Self-Raking Reaper.*

Agents, properly recommended wanted throughout the country. Experienced agents preferred. It is important this ... to have the machines widely scattered.

Descriptive circulars with cuts, and giving impartially ... difficulties as well as the successes of the reaper, mailed to ... paid applications.

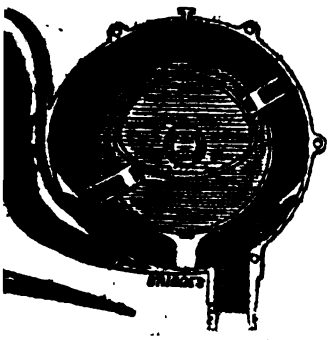
J. S. WRIGHT,

"Prairie Farmer" Warehouse, Chicago, Feb. ...

Ammoniated Super-Phosphate of Lime.

This very superior fertilizer, having been fairly tested by farmers and planters, is acknowledged to possess many advantages over Guano. At the same price per ton, and sown in equal quantity, its first effects are equal, if not superior, on most crops, to those of Guano, whilst they last much longer. It may be applied as a top dressing until April ... as much benefit as if used at time of sowing. Manufactured and for Sale at the Seed and Agricultural Warehouse of ... ROGERS, No. 29 Market Street, Philadelphia. ...

W. CARY'S ROTARY FIRE-ENGINE PUMPS.



The Inventor, after thoroughly testing this engine pump, for the past two years,) feels confident that it is not equalled by any thing now in market, in the way of raising or forcing water: the motion being rotary, the stream is constant, without the aid of an air vessel. The packing is self-adjusting, very durable, and cannot well get out of order.

These pumps are well calculated for all the purposes for which pumps or hydrants may be used, viz., Factories, Steamboats, Tanneries, Breweries, Distilleries, Railroads, Water Stations, Hotels, Mines, Garden Engines, &c.

Among the many testimonials given of this pump, is a gold medal awarded at the last great Fair of the American Institute.

No. 1 is a house or well pump and domestic Fire Engine, and will raise from 20 to 30 gallons per minute.

No. 2 will raise 100 gallons at 120 revolutions.
No. 2½ " 200 " 120 "
No. 3 " 300 " 120 "

The quantity raised can be doubled, by doubling the revolutions. These machines are manufactured and sold by the subscribers at Brockport, N. Y., also in this city, 46 Courtland street, (corner of Greenwich,) by J. C. CARY.

CARY & BRAINERD.

Sept. 18–1y.

ENAMELED FURNITURE.

subscriber invites the attention of those about furnishing a elegant and fashionable style of *Chamber Furniture*, nek, manufactured from the best of materials and by t experienced and faithful workmen, under his own su-n.

s consisting of Bureau with Glass, Wash-stand, Table, d, and 4 Cane seat Chairs, are offered as low as $25. marble tops as low as $45 the suit and upwards, with the n of Commode and Rocker to $150 the set, price varying ing to style and finish. Every article warranted.

Hotel and Boarding House Keepers will find this the cheapest and best place to get this style of *Furniture* as we manufacture nothing but the Enameled.

Orders from a distance promptly attended to, and goods carefully packed.

S. N. WARWICK,
No. 62 WHITE STREET,
Dec. 1y. *Three doors West of Broadway, N. Y.*

PORTRAITS.

Subscriber, from a long and steady practice in the art of, as well as by her success in, portraying upon canvas the

LIFE LIKENESS OR PORTRAIT OF THE SITTER,

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Mechanical and Architectural Drawings executed in all kinds of Perspective, with dispatch and at moderate prices.
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LONG ISLAND RAILROAD.

SUMMER ARRANGEMENT.

On and after Saturday, July 1st, 1854, Trains will start as follows—

TRAINS GOING EAST.

Leave Brooklyn at 10 A. M. for Greenport.
" " 2.45 P. M. for Syosset.
" " 3.45 P. M. for Yaphank.
" " 4.15 P. M. for Syosset.
" " 6.00 for Hempstead.
" " 7.30 P. M. for Jamaica.

On Saturday, the 3 45 P. M. Train will run to Greenport, and leave Greenport at 4.30 A. M. Monday. On Wednesdays and Saturdays the 7.30 P. M. for Brooklyn.

Jamaica train will run to Farmingdale, and leave Farmingdale on Thursdays and Mondays at 4.25 A. M. for Brooklyn.

Freight Train leaves Brooklyn at 7 A. M. for Greenport.

TRAINS GOING WEST.

Leave Greenport at 10 A. M. for Brooklyn.
" Yaphank at 6.05 A. M. for Brooklyn.
" Farmingdale at 7.30 A. M. for Brooklyn.
" Syosset at 7 A. M. and 4.55 P. M for Brooklyn.
" Hempstead at 6 20 A. M. for Brooklyn.
" Jamaica at 5.40, 7.02, 8, and 8.45 A. M., and 2.15 and 6 23 P. M. for Brooklyn.

Freight train will leave Greenport at 7 A.M. for Brooklyn.

On Hempstead branch, cars will connect with all the above trains, except the 8am at 4.15 P. M. from Brooklyn.

The Yaphank train will make no stops west of Jamaica going either way, and the Syosset train into Brooklyn at 7 A.M., and one at 4.15 P. M., will not stop between Hicksville and Jamaica, except at Hempstead branch.

WM. E. MORRIS, President.

HUDSON RIVER RAILROAD.

SUMMER ARRANGEMENT.

NEW-YORK TO AND FROM ALBANY AND TROY.

On and after Monday, May 29th, 1854, the Passenger Trains will run as follows:

GOING NORTH.—Leave New-York from the office cor. Chambers Street and College Place, at

6.00 A.M. Express train for Albany and Troy, connecting with northern and western trains. Through in four hours from 31st street.

7.00 A.M. Poughkeepsie Way Passenger Train, stopping at all Stations, and carrying the Way Mail from New-York to Poughkeepsie.

9.00 A.M. Mail Train for Albany and Troy, stopping at Peekskill, Garrison's, Cold Spring, Fishkill, New-Hamburg, and at all Mail Stations north of Poughkeepsie.

10.00 A.M. Peekskill Way Passenger Train, stopping at all stations.

12.00 M. Way Train for Albany and Troy, stopping at Yonkers, Tarrytown, Sing Sing, Croton, Peekskill, Garrison's, Cold Spring, Fishkill, New-Hamburgh, Poughkeepsie, Hyde-Park, Rhinebeck, Hudson, Tivoli, Oakhill, Stuyvesant, and Castleton, and connecting with the Express Train leaving Albany at 6.30 P.M. for Buffalo, and at Troy with northern Trains for Montreal.

1.00 P.M. Poughkeepsie Freight and Passenger Train, stopping at all Stations.

3.00 P.M. Peekskill Way Passenger Train, stopping at all Stations.

4.00 P.M. Express Train to Albany and Troy, stopping at Sing Sing, Peekskill, Cold Spring, Fishkill, Poughkeepsie, Rhinebeck, Hudson, connecting at Albany with Western Express Trains at 10.30 P.M. for Buffalo.

4.15 P.M. To Poughkeepsie, stopping at all Way Stations.

5.00 P.M. Way Train for Albany and Troy, stopping at Tarrytown, Peekskill, Garrison's, Fishkill, Poughkeepsie and stations north on signal, and connecting at Albany at 10.30 P.M. for Buffalo.

5.30 P.M. To Peekskill, stopping at all Way Stations.

6.30 P.M. Emigrant and Freight Train for Albany and Troy, stopping at all Time Table Stations.

7.45 P.M. From 31st Street, Through Freight Train for Albany and Troy.

11.00 P.M. To Tarrytown, stopping at all Way Stations.

4.30 A.M. Leave Poughkeepsie for Albany, Way Freight and Passenger Train, stopping at all Stations.

GOING SOUTH.—Express Passenger Train for Fishkill, leave Troy Union Depot at 6.00 A.M.; Albany, 6.45 A.M.

Way Mail and Passenger Train for Mail Stations, leave Troy Union Depot at 6.00 A.M.

Express Train for New-York, stopping only at Rhinebeck, Poughkeepsie, Fishkill and Peekskill, leave Depot at 6.30 A.M.; Albany, 6.45 A.M.

Way Train, stopping at Castleton, Stuyvesant, Hudson, Oakhill, Tivoli, Barrytown, Rhinebeck, Hyde Park, Poughkeepsie, New-Hamburgh, Fishkill, Cold Spring, Garrisons and Peekskill, leaves Troy 10.30 A.M.; Albany, 11.00 A.M.

Way Freight and Passenger Train for Poughkeepsie at all Stations, leave Albany at 1.45 P.M.

Express Train, stopping only at Hudson, Rhinebeck, Poughkeepsie, Fishkill, Cold Spring, and Peekskill, leave Depot at 4.35 P.M.; Albany, 4.45 P.M.

Milk, Freight and Passenger Train, stopping at all on signal, leave Albany at 5.30 P.M.

From East Albany, Through Freight Train, leave at 7.00 P.M.

Leave Poughkeepsie for New-York at

4.30 A.M. Way Freight Train, stopping at all Stations.

6.15 A.M. Way Passenger Train, stopping at all Stations, except Manhattan.

4.00 P.M. Way Passenger Train, stopping at all Stations.

Leave Peekskill for New-York at

6.30 A.M. Way Passenger Train.

3.30 P.M. Way Passenger Train.

8.30 P.M. Way Passenger Train.

Leave Sing Sing for New-York at

6.00 A.M. Stopping at all Way Stations.

Passengers are requested to procure Tickets before the cars. Tickets purchased in the cars will be five cents. Trains will stop sufficient time at Poughkeepsie for refreshments.

Freight forwarded to the West and North, as expeditiously, safely and cheaply, as by any other Line.

New-York, Monday, May 29, 1854.

New York and New Haven Railroad.

SUMMER ARRANGEMENT—1854. COMMENCING MAY 15, 1854.

TRAINS FROM NEW YORK.

For New Haven—Accommodation—At 7 and 11 30 A. M. and 4 10 and 5 15 P. M. The 4 P. M. train is Express to Greenwich.

Express—At 8 A. M., 3 and 4 P. M. The 8 A. M. train stops at Stamford and Bridgeport; the 3 P. M. at Stamford, Norwalk and Bridgeport; the 4 P. M. at Stamford.

For Port Chester and Norwalk—Special Accommodation Trains—At 8 45 A. M. & 3 30 P. M. for Norwalk, & 1 30 P. M. & 4 20 P. M. for Port Chester.

For Boston, via Hartford, Springfield & Worcester—Express—At 8 A. M. and 4 P. M. Dine and sup at Springfield.

For Connecticut River, Vermont Railroads, and Montreal—Express—At 8 A. M. Dine at Springfield.

For Accommodation Trains of the New Haven, Hartford and Springfield Railroads—At 11 30 A. M. & 6 P. M.

For Canal R. R.—At 8 A. M. and 11 30 A. M.

For New Haven and New London Railroad—Express at 8 A. M. to New London, Norwich, Stonington and Providence, and 3 P. M. to New London only.

For Housatonic R. R.—Express—At 8 A. M.

For Naugatuck R. R.—Express—At 8 A.M. and 3 P.M.

For Danbury and Norwalk R. R.—Accommodation at 8 45 A. M., and Express at 4 10 P. M.

TRAINS TO NEW YORK.

From New Haven—Accommodation—At 5 30, 6 45 and 10 A. M. and 4 30 P. M.

Express—At 9 35 A. M. and 1 10, 1 50, & 9 35 P. M.

From Norwalk and Port Chester—Special Accommodation Trains from Norwalk, at 6 A. M.; from Port Chester, at 9 A. M., and 3 50 P. M.

See large bill of advertisements at the Station House and Hotels.

GEO. W. WHISTLER, JR., Superintendent.

Vice Pres't and Supt.'s Office, 87, Canal Street, N. Y.

Ass't Supt.'s Office, Station House, New Haven.

NEW YORK AND ERIE RAILROAD.

PASSENGER TRAINS LEAVE PIER FOOT OF DUANE-ST., AS FOLLOWS:

Trains leave Pier foot of Duane St., as follows, viz:

Buffalo Express, at 6 A. M. for Buffalo direct, without change of baggage or cars.

Dunkirk Express at 7 A. M., for Dunkirk.

Mail at 8 25 A. M. for Dunkirk and Buffalo, and intermediate stations.

Way Express at 12 45 P. M. for Dunkirk.

Rockland, Passenger, at 3 P. M. (from foot of Chambers-st.,) via Piermont, for Suffern and intermediate stations.

Way Passenger, at 4 P. M. for Otisville and intermediate stations.

Night Express at 5 P. M. for Dunkirk and Buffalo.

Emigrant Train at 6 P. M.

On SUNDAY only one Express Train, at 5 P. M.

These Express Trains connect at Buffalo with first-class steamers on Lake Erie for all ports on the Lake; at Dunkirk with the Lake Shore Railroad for Cleveland, Cincinnati, Toledo, Detroit, Chicago, &c.

D. C. McCALLUM, General Superintendent.

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SERIES OF DISCOURSES RECENTLY DELIEVRED IN NEW YORK.

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DISCOURSE I.—The Lessons of the Street.
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" III.—Strife for Precedence.
" IV.—The Symbols of the Republic.
" V.—The Springs of Social Life.
" VI.—The Allies of the Tempter.
" VII.—The Children of the Poor.
" VIII.—The Help of Religion.

EXTRACT FROM THE PREFACE.

" This volume aims at applying the highest standard of Morality and Religion to the phases of every-day life. In order, however, that the view with which these discourses have been prepared may not be misconceived, I wish merely to say, that I am far from supposing that these are the only themes to be preached, or that they constitute the highest class of practical subjects, and shall be sorry, if in any way, they seem to imply a neglect of that interior and holy life which is the spring not only of right affections, but of clear perception and sturdy every-day duty. I hope, on the contrary, that the very aspects of this busy city-life—the very problems which start out of it—will tend to convince men of the necessity of this inward and regenerating principle. Nevertheless, I maintain that these topics have a place in the circle of the preacher's work, and he need entertain no fear of desecrating his pulpit by secular themes who seeks to consecrate all things in any way involving the action and welfare of men, by the spirit and the aims of His Religion, who, while he preached the Gospel, fed the hungry and healed the sick, and touched the issues of every temporal want. I may have failed in the method, I trust I have not in the purpose."

NOTICES OF THE PRESS.

" The book before us is one of no ordinary character. In the multitudinous verbosity that hourly teems from the Press, and thrust under the eye of Editors, it is seldom we find so rare an embodiment of perspicuous thought, as the new volume 'Humanity in the City.' The author has the happy faculty, so agreeable to the intelligent reader, of heaping a world of meaning into few words. He is, in fact, eminently suggestive. His ideas stand forth, clear and naked, like the close cut features of the marble."—*Daily Gazette, Nashville, Tenn.*

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'Humanity in the City,' has already become a favorite with all classes of people, and readers of every degree; it is so eloquent, so true, so Christian in sentiment, manly in tone, effective in style, that such a result is but natural."—*Transcript, Boston.*

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WOODWORTH'S YOUTH'S CABINET

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ILLUSTRATED DOLLAR MAGAZINE,

EDITED BY

FRANCIS C. WOODWORTH,

AUTHOR OF

THEODORE THINKER'S TALES, UNCLE FRANK'S HOME STORIES &c.

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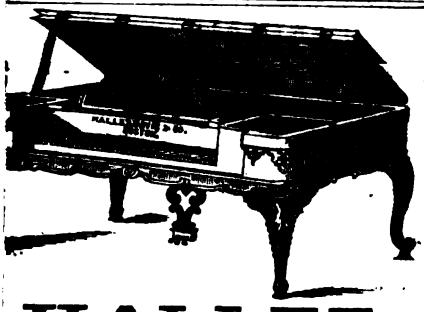

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Where COUNTRY MERCHANTS would find it greatly to their advantage to call before making their selection.

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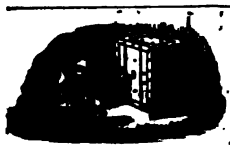

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To Merchants, Jewellers and Bank Directors, we would only say, examine them, and the proofs, and you will be convinced of their superiority over all others manufactured.

Our business is done in a plain, straight forward way, without resorting to humbug or large talk.

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Our depot, where an assortment of all kinds and sizes are constantly on hand, is at 33 MAIDEN LANE,

2 doors from Nassau St., N. Y.

WM. McFARLAND & CO.

Newyork, Aug. 29, 1853.

Messrs. McFarland & Co.:

GENTS:—It affords us pleasure to inform you that the Fire and Burglar Proof Safe we purchased of you, preserved our books and papers at the disastrous fire of the Pearl St. House last evening, in the most perfect manner. Although it was covered throughout the fire, with burning Roofs and other debris, and directly under a broken gas pipe, in the most intense heat, it remained true to its name, and its contents, when taken out, were not even scorched, and happily bore the assault of fire. To any one in want of a superior Safe, a perfect safeguard against fire, we cheerfully recommend your manufacture, having had a personal experience of their excellence.

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POND & HITCHCOCK.

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Baltimore, Md., No. 145 Pratt Street
Chicago, Ill., corner South Water and Franklin Sts.
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Port Phillip, Australia, 19 West Street.

Agents.—Kendall, Richardson & Co., Bath, Me. Henry Butler, Bangor, and T. McFarland, Richmond, Me. Jan. 1y

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INFALLIBLE LIQUID HAIR DYE.

This is a new article, just presented to the public. The proprietors have made the human hair the study of their lives, and had occasion to use the thousand and one specifics which ignorant charlatans palm upon the public, they are able to judge their injuriousness. After the invention of the present Dye, they for a long while, content to satisfy their own customers, made use of it only in their own business; but its merits becoming known, they were absolutely compelled to bring it before the public. Here it has been but a short time, yet its success has been unprecedented. Requests for the appointment of agents for sale have poured in by every mail, while the orders for the article itself have almost exceeded the ability of the proprietors to supply. Its merits may be curtly summed up as follows: It is easily applied, and can be used by all without danger, full directions accompanying each bottle. It does not color the hair by scorching, like other preparations, but acts upon it by a newly discovered chemical power. Recent researches show that the hair is triangular, and in its natural state possesses all the powers of the prism. To restore this prismatic virtue is the theory of the Hair Dye. It also gives the fibres their soft and glossy texture, protects the sacs in which all of them terminate. It does not stain the skin, and is the only compound of the kind upon which perfect reliance can be placed, as it never fails in giving a beautiful and natural black or brown color to the hair, whiskers or eyebrows.

The proprietors are prepared to furnish it in large or small quantities. Price $1 and $1 50 per bottle, according to size. Liberal reduction to those who buy to sell again.

In answer to the numerous inquiries from every part of the country, Messrs. D. & M. would say that if there be no agent who has their Dye in the vicinity where the party wishing it resides, by inclosing $1 a bottle will be forwarded. Persons sending requests for the agency of it will please state plainly the place or district in which they wish to dispose of it.

DEMONET & MEYERS, Proprietors,

April, '54, tf. No. 13 Courtlandt Street, under the Western Hotel, N.Y. City.

SCRIBNER'S OAK OIL.

This very valuable Family Remedy for the cure of wounds, bruises, cuts, burns, and other diseases of an inflammatory nature, now regarded as a desideratum in medicine. For inflamed eyes and catarrhal affections this application will be found to be a mild, safe and effectual remedy. For Bleeding Piles there is no application so effectual as the Oak Oil. Diarrhœa, scurvy, rheumatism and chilblains are speedily relieved by its use. For sale by Druggists generally, and by the Proprietors,

pril, '54, tf. DAY & VAN DEUSEN, 114 Chambers Street, New-York.

REMOVAL.

The Office of VAN DEUSEN'S IMPROVED WAHPENE is removed from No. 128 to 114 CHAMBERS ., where the Proprietors, Day & Van Deusen, invite their friends and patrons and the public at large, to all and procure the above celebrated article.

The Wahpene, as is well known to those who have used it, is not a Dye, gotten up to color the hair transiently; but a medical reparation which penetrates the bulb or root of the hair, promoting a healthy action throughout, and restoring it to its natural fullness of growth. Testimonials of its efficacy, in numerous instances, from sources of the highest respectability, may be seen at he Office, No. 114 Chambers Street.

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FROM THE

BAUR CHEMICAL WORKS,

OF STATAN ISLAND.

The Subscriber begs leave to inform the Farmers and Gardeners who have left orders for the above Manure, that he is now prepared to deliver the same, either from the Works on Staten Island, or from the Depot in New York.

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Persons Insuring with this Company, will be entitled to their pro rata share of the first declared dividend. The rates and principles adopted have stood the test of experience, and must secure, beyond contingency, the object for which Life Insurance is effected,—immediate and permanent aid to the Widow and Orphan.

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The original and only article that can be sold without infringing the patent, will at all times be kept, both ground and in Dry Powder, at 119 PEARL STREET, by the Patentee.

The Patent has just been decided in the United States Court to be good and valid.

In consequence of this decision throwing the entire business into my hands, I shall very materially reduce the price, as I can manufacture a large quantity much cheaper, proportionally, than a small one. All infringers will be prosecuted.

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The subscriber, who is the inventor of the

BURRING MACHINES

which are attached to Carding Machines, informs

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that he has increased facilities for manufacturing superior Burring Machines, and likewise for Second Breakers. In addition to which, manufacturers who prefer the metal cylinders invented by J. L. Tuttle, may be supplied with them at short notice.

The subscriber is giving his personal attention to the manufacture of these Machines, which, he has not doubt, will please purchasers.

The legal right for building these Machines is in the subscriber.

Orders addressed to HAYES & REDFIELD, No. 38 Ann Street, will receive prompt attention.

S. R. PARKHURST.

New York, January 17, 1854. 3m.

WATER WHEELS.

The Subscribers offer for sale "Jagger's Improved French Turbine Water Wheel," which they believe to be unrivalled. Circulars and Tables relating to the same may be obtained at this office, or will be forwarded to any one desiring them.

JAGGER, TREADWELL & REEL,

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ATKINS' SELF-RAKING REAPER.

40 OF these machines were used the last harvest in grass or grain, or both, with almost uniformly good success, in nine different States and Canada.

TWENTY-SIX PREMIUMS,

including TWO *at the Crystal Palace*, (silver and bronze medals,) were awarded it at the autumn exhibitions. I am building only 300, which are being rapidly ordered. Mr. Joseph Hall, Rochester, N. Y., will also build a few.

☞ Ready orders necessary to insure a reaper.

Price at Chicago $175—$75 Cash with order, note for $50, payable when reaper works successfully, and another for $50 payable 1st December next, with interest. Or $160 cash in advance.—*Warranted to be a good Self-Raking Reaper.*

Agents, properly recommended wanted throughout the country. Liberal terms and agencies preferred. It is my object to have the machines widely scattered.

Descriptive circulars with cuts, and giving impartially the difficulties as well as the successes of the reaper, mailed to post-paid applications.

J. S. WRIGHT,

"Prairie Farmer" Office, Chicago, Feb. 1854.

Ammoniated Super-Phosphate of Lime.

This very superior fertilizer, having been fairly tested by farmers and planters, is acknowledged to possess many advantages over Guano. At the same price per ton, and sown in equal quantity, its first effects are equal, if not superior, on most crops, to those of Guano, while they last much longer. It may be applied as a top dressing until April with as much benefit as if used at planting time. Manufactured and for Sale at the Seed and Agricultural Warehouse of C. E. ROGERS, No. 29 Market Street, Philadelphia. Feb. 8

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A concise History of England from the invasion by the Romans to the accession of Queen Victoria. Written on a new plan, h particular reference to Chronology and Facts. By W. CLARK, Esq. Edited with additions and questions, by Prof. J. C. EAT, of Princeton College. 362 pages, 75 cents.

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Field, Garden and Flower Seeds.—A large variety. **Fertilizers**—Peruvian Guano, Super-Phosphate Lime, Bone Dust, Poudrette, Charcoal Dust, Plaster, &c.

Manufacturers of SCHNEELY'S Reaping and Mowing Machine; **DANIEL'S** Hay, Straw and Stalk Cutters. Agents for the sale of Wm. Hovey's Patent Straw Cutter. A descriptive catalogue will be sent on application by mail.

Oct. '53, 1y.

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COLUMNS, TABLE TOPS, &c., &c.

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Continue to present to the public the largest and best assortment of Marbleized Iron manufactures. For richness and delicacy of coloring, correctness of imitation, and beauty of finish their articles are unsurpassed by any others that have yet been offered. They have the testimony of numerous Architects, Builders, and others as to their value, and in addition the award of a **GOLD MEDAL** by the American Institute, and the highest prize **MEDAL** at the Fair of the Metropolitan Mechanics' Institute, held at Washington.

☞ This material is in many respects superior to marble, whilst it is accurate as to representation, it sustains a higher polish, and is therefore more beautiful. In addition, it is unaffected by the action of acids or oils, and having an iron basis it is not likely to be injured or broken in transportation. Builders and others are invited to examine the stock of this Company, and their correspondence is solicited.

All communications may be addressed to the Financial and General Agent, JOHN RUSTON, cor. Hudson and 13th Streets, New-York.

Oct., '53.

SEVENTH ANNUAL EXHIBITION of the MARYLAND INSTITUTE,

FOR THE PROMOTION OF THE MECHANIC ARTS.

The Seventh Annual Exhibition of the Maryland Institute will take place on the 18th of September next, at the spacious Hall of the Institute.

Mechanics, Manufacturers, Artists, Inventors and others in the State of Maryland, as well as the country at large, are respectfully invited to avail themselves of the opportunity thus afforded to display their taste and skill in the collection about to be made.

The Maryland Institute is now established upon a footing which enables the Managers to hold out stronger attractions than, perhaps, any similar Institution in this Country. The central position of the City of Baltimore and its contiguity to the Seat of Government, ensure the most extended facilities for an Exhibition of the works of Art and Mechanical skill which may be placed in charge of the Institute; and the great care heretofore taken in the appointment of suitable and impartial Judges, to establish the grade in which each contributor is entitled to stand, and to pronounce upon the Certificates of merit gives earnest of the desire of the Managers, to avoid all ground of complaint in this most delicate department of their labors.

The purpose of the Managers will be to make the approaching Exhibition one of the most attractive that has heretofore taken place in this country. Their splendid Hall is now complete in all its appointments, and is admirably adapted, as is well known, to the accommodation and display of the objects of taste and interest, of whatever class or description, which may be entrusted to them by those engaged in Mechanical pursuits.

The Board of Managers earnestly invite the active co-operation of the Mechanics and Industrial Classes throughout the Country in contributing to the important object they have in view.

Any information in reference to matters of detail, will be promptly given by addressing; post paid, the Actuary of the Institute, Mr. John S. Selby.

THOS. SWANN,
Chairman Executive Committee.

GUNS, PISTOLS, AND CUTLERY.

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160 *FULTON STREET,*

One Door West of Broadway, opposite St. Paul's Church,

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Sole Agent for KLEIN'S PATENT PRIMERS AND CARTRIDGES for Patent Needle Guns.

Importer and Dealer in Guns, Pistols, and Rifles.

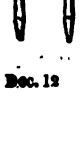
Is constantly receiving from manufacturers a full assortment of the above articles, together with Wostenholm's and other makers of Bowie, Camp, Sportsmen's and Pocket Knives; Powder Flasks, Shot Pouches, and Belts; French, American and English Percussion Caps, (from all the celebrated makers;) Baldwin's and Ely's Patent Gun Wadding; Sporting Implements, Fishing Tackle, &c.; Colt's Patent and Deringer's celebrated Pistols; French Parlor Pistols, and Canes.

Agent for "Porter's" Patent Revolving and Repeating Rifles, and for all kinds of Sporting Ammunition, which he is offering at very low prices.

☞ Prompt and particular attention given to the filling of orders.

Dec.1y.

PATENT EXPANSION BITS.



The above Cuts represent three sizes Patent Expansion Bits, when taken collectively form a complete set of Center Bits, which will bore any required diameter from ¼ inch to 2½ inches.

This set of Expansion Bits will perform all that 81 Ordinary Bits of 1-16 inch sizes can be made to, and also an numerous sizes between, saving half the expense.

All Artists in Wood who have so frequently desired a Bit between the sizes of any in their set, will appreciate its value at sight, and all persons using Bits will find them the great desideratum.

The above Patent Expansion Bits can be obtained at the principal Hardware Stores in the City, and of the Patentee, C. L. Barnes, at his Manufactory, 27 *Hamersley Street, N. Y.*

☞ Town, County, and State Rights for sale. Apply to

CHARLES L. BARNES,
No. 9 Cottage Place, N. Y.

Dec. 12

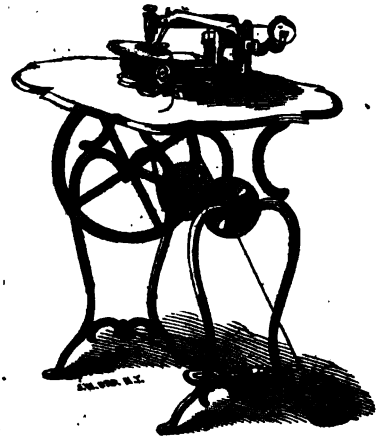
WHEELER & WILSON MANUFACTURING COMPANY'S

SEWING MACHINE,

MANUFACTURED AT WATERTOWN, CONN.

OFFICE, 265 BROADWAY, NEW-YORK.

A. B. WILSON'S PATENT,
(*August* 12, 1851,)
AND JUNE 15, 1852



AGENCIES AT
63 COURT ST., BOSTON,
172 CHESTNUT ST., PHILAD'PHIA,
IRON HALL, WASHINGTON.

These Machines have been in successful operation, in the hands of manufacturers and families the past two years, and in every case have given universal satisfaction. The Proprietors are now pared to offer them to the public, with that increased confidence in their merits which the united imony of their numerous customers has strengthened and confirmed.

These Machines are entirely different from any other, the principles on which they are made ng *exclusively* our own.

Among the advantages of this Machine over any others are the following:—

1. The simplicity of its construction, and the ease with which it can be kept in the most perfect er.

2. The perfect manner with which the operator is enabled to stitch and sew the various kinds of rk, from the finest linen to the coarsest cloths.

3. It particularly excels in the rapidity with which work can be executed; in that respect it s no equal.

4. The little *power* required to propel them, enabling even those of the most delicate constitution use them without injury to their health.

We are now manufacturing a larger sized Machine, more particularly adapted to the sewing of ther, canvas bags, and the heavier kinds of cloths.

An examination of our Machines is respectfully solicited at our Office, 265 Broadway.

Feb. 1y.

CHURCH AND PARLOR ORGA

M. LUCAS & CO.,

(SUCCESSORS TO M. O. NICHOLS.)

MANUFACTURERS OF CHURCH AND PARLOR O

WAREROOMS, 90 TREMONT STREET, BOSTON,

Where may be found a great variety of Instruments of superior tone and finish.

These Organs are carefully and substantially made and tuned in the equal, temperament, comm good in the remote as in the common keys.

Every Instrument is warranted to be unsurpassed in quality and durability by any in the Ame ket, and for purity, beauty, and strength of tone are believed to be unequalled.

A FARM AND WATER POWER FOR SA

FOR SALE.—A Farm with extensive Water Power Privilege, together wit Acres of land, located about two and a half miles from Milerville, in Ulster Co., on the line of the Del and Hudson Canal. About one-third of the land is in a high state of cultivation; six dwelling hou accommodate nine families; a store, with sheds adjoining; barn and sheds, and a saw-mill; also a n failing stream of water, with falls sufficient to erect several over-shot water wheels, all of which is venient to the dwelling and the road leading to the canal.

For further particulars enquire of S. CUTTER, No. 386 Ninth Street, New-York: G. SANFORD Mill Street, Po'keepsie, or of the Proprietor on the premises.

tf. JAMES M. SANFORD

To Pork and Beef Butchers, Private Families and Oth

P. B. DIDIER & BRO'S

IMPROVED SAUSAGE OR PIE MEAT CUTTER FOR 1854.

PATENT APPLIED FOR.

This celebrated Machine is warranted, with proper care and use, to cut or mince 4 lbs. of fine meat per minute; or 240 lbs. per hour,—not liable to get out of repair, and easily operated by a small boy. The simplicity of construction and the ease with which every part subject to wear may be replaced, serve to recommend this as the cheapest and most perfect machine ever invented. Being made entirely of Iron, (with one or two exceptions) renders it more durable than those usually made of wood, and much easier kept sweet and clean, and no warping or swelling when necessarily used, as is the case with others.

N. B.—One great objection to Meat Cutters is that the knives are stationary. In our machine the objection is obviated, as the knives can be taken out, cleaned and put back in a minute. The machine is regulated for cutting fine or coarse meat by putting in more or less knives.

It is warranted to cut Sausage or Pie Meat equal to any machine in the country, both as regards quantity and quality. Also, warranted to cut five times the amount, and of a better quality than any cutter at the price—Again, less complicated, durable, requiring less power to operate it than any invention of the age.

The Maryland State Agricultural Fair, and the Mechanics' Institute, awarded this Machine first premium in the years 1851, 1852, and 1853; and executive committees on all occasions of competition, favored this useful article. Retail price, $5,50.

A first-rate article of Sausage Stuffer or Filler retail $4, $4 50, $5, $5 50.

N. B.—Agricultural Implement Makers and Venders, Hardware Merchants and others, *would do well to take this machine* on sale, owing to its popularity, and the liberal discount to the trade. The article is bound to be in possession of farmer and private family. We have in store and ready season, about 5000 Cutters, for which we solicit buyers, sale and Retail.

Sept., 3mos P. B. DIDIER & BRO., No. 97 N. Paca Street, Baltimore, Md.

MEXICAN PHOSPHATIC GUANO.

A permanent manure that will not evaporate in the atmosphere, burn the crop, or exhaust the soil.

☞ One ton of this PHOSPHATIC GUANO, is equal to *three* tons of Peruvian or any other ammoniacal Guano on exhausted lands, in yielding Wheat, Corn, Rye, Oats, or other Grains, Clover, Grass, &c.

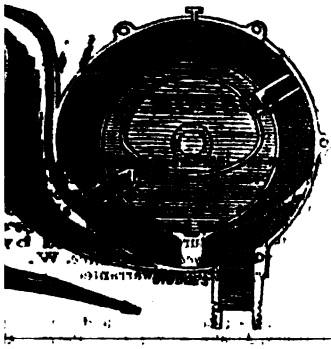
Price at Retail, per Ton of 2000 *lbs.* $40.
" " *for* 5 *Tons* " 38.

Dealers supplied at wholesale from cargoes now arriving, on liberal terms. *Full particulars on application* to the subscriber.

Every package is branded with the name of the Sole Agent and is guaranteed.

Aug. 7. tf. Apply to H. N. FRYATT, Sole Agent, 160 Water Street, *New-York City*

W. CARY'S ROTARY FIRE-ENGINE PUMPS.



THE Inventor, after thoroughly testing this engine pump, for the past two years,) feels confident that it is not equalled by any thing now in market, in the way of raising or forcing water: the motion being rotary, the stream is constant, without the aid of an Air vessel. The packing is self-adjusting, very durable, and cannot well get out of order.

These pumps are well calculated for all the purposes for which pumps or hydrants may be used, viz., Factories, Steamboats, Breweries, Distilleries, Railroads, Water Stations, Hotels, Mines, Garden Engines, &c.

Among the many testimonials given of this pump, is a gold medal awarded at the last great Fair of the American Institute.

No. 1 is a house or well pump and domestic Fire Engine, and will raise from 20 to 30 gallons per minute.

No. 2 will raise 100 gallons at 120 revolutions.

No. 2½ " 200 " 120 "

No. 3 " 300 " 120 "

The quantity raised can be doubled, by doubling the revolutions. These machines are manufactured and sold by the subscribers at Brockport, N. Y., also in this city, 48 Courtland street, (corner of Greenwich,) by J. C. CARY.

CARY & BRAINERD.

Sept. 18–1y.

ENAMELED FURNITURE.

subscriber invites the attention of those about furnishing elegant and fashionable style of *Chamber Furniture*, ork, manufactured from the best of materials and by experienced and faithful workmen, under his own su-

consisting of Bureau with Glass, Wash-stand, Table, s, and 4 Cane seat Chairs, are offered as low as $35. arble tops as low as $45 the suit and upwards, with the of Commode and Recess to $150 the set, price varying g to style and finish. Every article warranted.

Hotel and Boarding House Keepers will find this the cheapest and best place to get this style of *Furniture* as we manufacture nothing but the Enameled.

Orders from a distance promptly attended to, and goods carefully packed.

S. H. WARWICK,

No. 62 WHITE STREET,

Dec. 1y. *Three doors West of Broadway, N. Y.*

PORTRAITS.

subscriber, from a long and steady practice in the art of, as well as by her success in, portraying upon canvas the

LIFE LIKENESS OR PORTRAIT OF THE SITTER,

eels warranted in inviting those who are wanting for themselves or their friends, a well-finished and lasting likeness, to call Rooms, 193 BLEECKER STREET, where Specimens of Art, in various styles, may be seen. Terms Reasonable.

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Mechanical and Architectural Drawings executed in all kinds of Perspective, with dispatch and at moderate prices.

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füller's Method for the Piano-Forte,—Revised by Julius Knorr,—Translated n the German, by G. A. Schmitt.

tters from numerous teachers, and the opinion of the press, musical, religious and secular, testify to the superior merits of work. The text is in English and German, and the already large sales of the Method are conclusive evidence of its popularity insure its general adoption. Price, complete, $3 00: in two parts, each part, $2 00.

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HARTE'S MELODEON INSTRUCTOR. Presenting in a series of two hundred popular studies a complete and progressive ol of practical instruction for the Melodeon and Reed Instruments, together with a choice collection of the best Songs, Polkas, ses, &c., &c. Price only $1 00.

OMBEY'S METHOD FOR THE VIOLINCELLO. Price, $2 00.

OHNSON'S SYSTEM OF HARMONY, ON THE PESTALOZZIAN OR INDUCTIVE METHOD. Price, $1 50.

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Published by Oliver Ditson, 115 Washington Street, Boston:

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WOODWARD & BROWN

387 WASHINGTON STREET, BOSTON.

WOODWARD & BROWN were awarded the FIRST PREMIUM for their Pianos at the last Great Exhibition held in Boston by the Massachusetts Charitable Mechanics' Association. Their competitors being the most distinguished in America, including the late Mr. Jonas Pickering, President of the above Association, to whom was assigned the second premium. W. B. also received the FIRST PREMIUM at the Worcester County Fair, held in the city of Worcester, over all competitors, thus incontestibly proving the great superiority of their Piano-fortes. And in addition to this, they have received many flattering testimonials from various instructors for the unrivaled excellence of the Instruments manufactured and exhibited by them.

Encouraged by such opinions from the best judges in the country, and aided by *twenty years experience*, W. B. confidently invite purchasers and dealers to inspect their stock before making selections. Every instrument warranted to give satisfaction, or the purchase money refunded.

☞ Second-hand Pianos taken in exchange.

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1y

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Plain, Ornamental & Enameled Chamber Furniture

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In offering, for the patronage of the public, goods of our own make, we feel confident of that success which industry and an honesty of purpose, that offers only good and warrantable articles, always merits, simply asking of all who may purchase to call and judge for themselves.

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Nov., 53, 1yr. N.B. Dealers supplied on liberal terms, and orders promptly attended to.

PREPARED SUPER PHOSPHATE OF LIME

BY THE UNION CHEMICAL WORKS, L. I.

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A FERTILIZER of the most approved quality, producing all the immediate effect of the best Peruvian Guano, with the advantage of being much more lasting in the soil. Thoroughly tested, and found to more than realize the expectations of all those who have already tried it. The best evidence of this is the largely increased demand this season over *the past year*. Put up in bags of 160 lbs.; barrels 250 lbs. each. Buyers will please be particular to observe our brand upon each bag or barrel.

Also for sale, American and Foreign Field and Garden Seeds. English Ray Grass, Foul Meadow Grass, fine natural Lawn Grass, White Clover, Osage Orange, &c.

Nov., 53.

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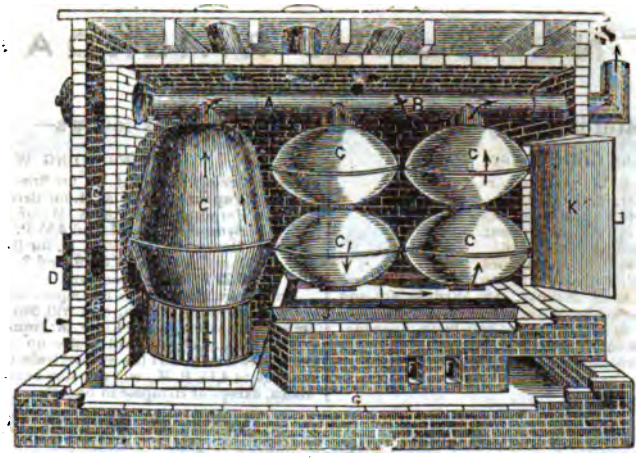
As are suited to the wants of the Mississippi Valley.

A business residence of sixteen years in the WESTERN STATES, a very extended acquaintance in all of the principal Western Cities, with the assistance of TRAVELING AGENTS, will offer to Eastern Manufacturers and Patentees unusual facilities through this Agency,

Walker's Patent



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Emerson's Patent Corresponding Ship Ventilators,

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Dec. 1y.

FALL OF 1858.

GREAT CENTRAL THROUGH LINE TO THE WEST!

☞ CARRYING THE GREAT WESTERN MAIL.

BALTIMORE AND OHIO RAILROAD,

From Baltimore to Wheeling, through in 18 hours!

Tunnels all completed, and Road in fine order.

THE EXPRESS MAIL TRAIN leaves Baltimore at 7 P. M. daily, on arrival of the 9 A. M. Train from New York, and proceeds directly through,—or Passengers leaving New York at 5 30 P. M., and Baltimore at 8 A. M., may lodge in Cleveland, and proceed thence in the morning to *Wheeling, where they arrive at* 1 *P. M.*

Baggage checked through to Wheeling, and NO CHARGE *for Transfer of Passengers or Baggage.*

Passengers will not fail to observe that this is THE CHEAPEST, as well as one of the most pleasant routes to the West.

FARE BY THROUGH TICKET,

BY RIVER FROM WHEELING, WITH THE RIGHT TO LIE OVER ON THE ROUTE.

From New York to Cincinnati	- -	$13 50	To Louisville,	- - -	$14 50
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Baltimore to	do. - - -	10 00	To do.	- - - -	11 00
Washington to	do. - - -	11 00	To do.	- - - -	12 00

An additional charge on board of the Boats for *Meals and State Rooms* of only $2 to Cincinnati—$3 to Louisville.

BY LAND ROUTE FROM WHEELING, &c.

From New York to Columbus,	- -	$15 62	To Cincinnati,	- - -	$18 62
Philadelphia to	do. - - -	13 30	To do.	- - - -	16 30
Baltimore to	do. - - -	12 30	To do.	- - - -	15 00
Washington to	do. - - -	13 00	To do.	- - - -	16 00

THROUGH TICKETS and general information apply at the following places:

NEW YORK, to J. L. SLEMMER, *cor. Park Place and Broadway, opposite the Park and one block above the Astor House.*
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BALTIMORE, to J. T. ENGLAND, *at Baltimore and Ohio Railroad Station.*
WASHINGTON, to T. H. PARSONS, *Agent at Railroad Station.*

WASHINGTON BRANCH.

LEAVE BALTIMORE at - - - - -	4 15 A. M.	LEAVE WASHINGTON, for Balt. at -	6 A. M.
Do. do. - - - - -	9 A. M.	Do. do. do. - -	8 A. M.
Do. do. - - - - -	3 30 P. M.	Do. do. do. - -	2½ P. M.
Do. do. - - - - -	7 P. M.	Do. do. do. - -	5 P. M.
On Sunday at - - - - -	4 15 A. M.	On Sunday at - -	6 A. M.
Do. - - - - -	6 10 P. M.	Do. - -	5 P. M.

THE FIRST and FOURTH Trains from Baltimore, and the SECOND and FOURTH Trains from Washington, will be Express Mail Trains—stopping only at Washington Junction and Annapolis.

LONG ISLAND RAILROAD.

SUMMER ARRANGEMENT.

On and after Saturday, July 1st, 1854, Trains will start as follows—

TRAINS GOING EAST.

Leave Brooklyn at 10 A. M. for Greenport.
" " 12 M. for Syosset.
" " 3.45 P. M. for Yaphank.
" " 4.15 P. M. for Syosset.
" " 6.00 for Hempstead.
" " 7.30 P. M. for Jamaica.

On Saturday, the 3.45 P. M. Train will run to Greenport, and leave Greenport at 4.30 A. M. Monday. On Wednesdays and Saturdays the 7.30 P. M. for Brooklyn.

The Jamaica train will run to Farmingdale, and leave Farmingdale on Thursdays and Mondays at 4.25 A. M. for Brooklyn.

Freight Train leaves Brooklyn at 7 A. M. for Greenport.

TRAINS GOING WEST.

Leave Greenport at 10 A. M. for Brooklyn.
" Yaphank at 6.08 A. M. for Brooklyn.
" Farmingdale at 7.20 A. M. for Brooklyn.
" Syosset at 7 A. M. and 4.55 P. M. for Brooklyn.
" Hempstead at 6.20 A. M. for Brooklyn.
" Jamaica at 5.40, 7.05, 8, and 8.45 A. M. and 6.23 P. M. for Brooklyn.

Freight train will leave Greenport at 7 A.M. for Brooklyn.

On Hempstead branch, cars will connect with all trains, except the one at 4.15 P. M. from Brooklyn.

The Yaphank train will make no stops west of going either way, and the Syosset train into Brooklyn and out at 4.15 P. M., will not stop between Hicksville, Jamaica, except at Hempstead branch.

WM. E. MORRIS, Presid

New York and New Haven Railroad.

SUMMER ARRANGEMENT—1854. COMMENCING MAY 15, 1854.

TRAINS FROM NEW YORK.

For New Haven—Accommodation—At 7 and 11 30 A. M. and 3 10 and 5 15 P. M. The 4 P. M. train is Express to Greenwich.

Express—At 8 A. M., 3 and 4 P. M. The 8 A. M. train stops at Stamford and Bridgeport; the 3 P. M. at Stamford, Norwalk and Bridgeport; the 4 P. M. at Stamford.

For Port Chester and Norwalk—Special Accommodation Trains—At 8 45 A. M. & 6 30 P. M. for Norwalk, & 1 30 P. M. & 4 20 P. M. for Port Chester.

For Boston, via Hartford, Springfield & Worcester—Express—At 8 A. M. and 4 P. M. Dine and stop at Springfield.

For Connecticut River, Vermont Railroads, and Montreal—Express—At 8 A. M. Dine at Springfield.

For Accommodation Trains of the New Haven, Hartford and Springfield Railroads—At 11 30 A. M. & 3 P. M.

For Canal R. R.—At 8 A. M. and 11 30 A. M.

For New Haven and New London Railroad—Express at 8 A. M. to New London, Norwich, Stonington and Providence, and 3 P. M. to New London only.

For Housatonic R. R.—Express—At 8 A.M.

For Naugatuck R. R.—Express—At 8 A.M. and 3 P.M.

For Danbury and Norwalk R. R.—Accommodation—8 45 A. M., and Express at 4 10 P. M.

TRAINS TO NEW YORK.

From New Haven—Accommodation—At 5 30, 6 and A. M. and 4 30 P. M.

Express—At 9 26 A. M. and 1 10, 1 50, & 9 25 P. M.

From Norwalk and Port Chester—Special Accom Trains from Norwalk, at 6 A. M.; from Port Ches A. M., and 9 50 P. M.

See large bill of advertisement at the Station House Hotels.

JAS. H. HOYT, Superintendent.

Vice Pres't. and Supt.'s Office, 87 Canal Street, N. Y.

Ass't Supt.'s Office, Station House, New Haven.

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Trains leave Pier foot of Duane St., as follows, viz:

Buffalo Express, at 6 A. M. for Buffalo direct, without change of baggage or cars.

Dunkirk Express at 7 A. M., for Dunkirk.

Mail at 8 15 A. M. for Dunkirk and Buffalo, and intermediate stations.

Way Express at 12 45 P. M. for Dunkirk.

Rockland, Passenger, at 3 P. M. (from foot of Chambers-st.,) via Piermont, for Suffern and intermediate stations.

Way Passenger, at 4 P. M. for Otisville and intermediate stations.

Night Express at 5 P. M. for Dunkirk and Buffalo.

Emigrant Train at 6 P. M.

On SUNDAY only one Express Train, at 4 P. M.

These Express Trains connect at Buffalo with first-class steamers on Lake Erie for all ports on the Lake; and Dunkirk with the Lake Shore Railroad for Cleveland, Cincinnati, Toledo, Detroit, Chicago, &c.

D. C. McCALLUM, General Superintendent.

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FOR BOSTON, WORCESTER, LOWELL, FITCHBURG, NASHUA, CONCORD, BELLOWS FALLS, &c., &c., via Norwich and Worcester, Worcester and Nashua, Boston and Worcester, New-London and Willimantic, and Palmer Railroads.

Passengers by this line leave pier No. 18, North River, foot of Courtlandt street, every day at 5 o'clock P.M., (Sunday excepted.)

Steamer CONNECTICUT, Captain J. W. Williams, will leave New-York every Tuesday, Thursday and Friday.

Steamer WORCESTER, Captain William Wilcox, will leave New-York every Monday, Wednesday and Friday.

Passengers by this line arrive in time to save the early trains out of Boston.

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Passengers taken at the lowest rates for New-London, Norwich, Willimantic, Stafford, Munson, Palmer, Worcester, Providence, Fitchburg, Lowell, Lawrence, Nashua, Concord, Bellows Falls and other places in Northern New-Hampshire and Vermont. Freight taken at the lowest rates.

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e rights of Inventors, and the interests of Mechanics and Manufacturers are carefully and practically discussed.
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55 for the 4th,	25 for the 10th,
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45 for the 6th,	15 for the 12th,
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Five doors East of Broadway.

The Subscribers having extensive and unsurpassed arrangements for manufacturing every article in their line prepared to offer to the public and dealers throughout the country WROUGHT and CAST IRON RAILING of every Gratings, Shutters, Doors; Portable Iron Bedsteads, plain and ornamental; Cribs and Cradles for Children; Iron Wash Stands, Flower and Work Stands, Umbrella and Hat Stands, &c., &c.; also, a superior quality of of Iron Fen of which they will warrant to surpass in strength, durability, beauty of design, and cheapness, the manufacture of House in their line. Orders from every section of the United States thankfully received, and executed with the

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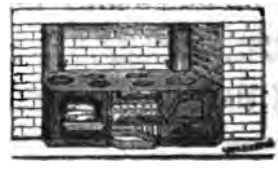
THE LADIES' FRIEND.

115 BLEECKER ST. New-York,



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This is the best Range in use for baking and boiling, and it works with half the fuel that others use. A advantage is gained by passing the draft direct from the fire to the bottom of the oven, and by having chamber on the syphon principle between the fire and the oven, which so regulates the heat that it all sides alike. This Range is heavier than any other of its size, of extra material, and sold only by this facturer, 115 BLEECKER STREET, N. Y. F. S. MERR

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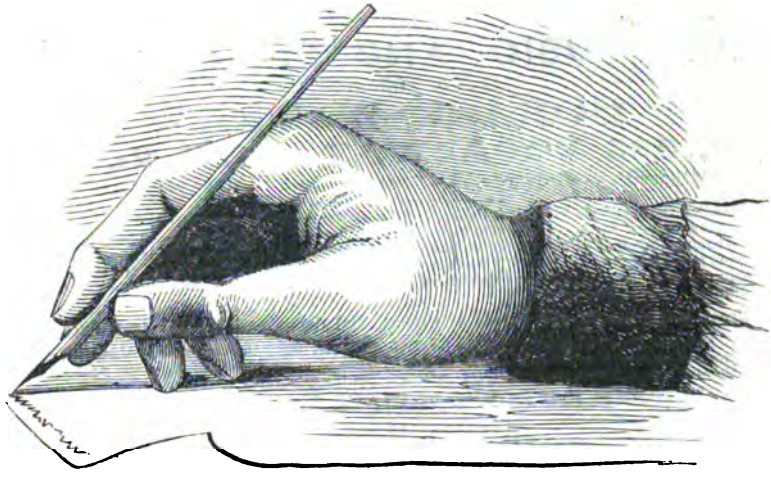

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MELODEONS.—EXTRACT FROM MUSICAL REVIEW.

In an article in the February number of the *Review*, answering some inquiries in regard to temperament made by "William W. jr., Brookfield, Vt.," I noticed a statement that Prince's Melodeons are tuned in the equal temperament. Since that time I have examined a number of Prince & Co.'s Melodeons, with special reference to the temperament, and have not found one tuned in equal temperament. The temperament in the Melodeons of Prince & Co.'s manufacture that I have examined, approaches nearer the equal than in those of Carhart & Needham, but it is far from equal, as any one "troubled with the nice ear," I think, will decide, if they will try the chords of F and F Sharp in succession.

A TUNER, Poultney, Vt.

We are very happy to stand corrected on this point. We made the statement alluded to above on the authority of a professor of music in this city, without having observed in reference to it ourselves—a thing we very seldom do. We have since examined Prince & Co.'s Melodeons, and find "A. Turner" right. Though nearer the equal temperament than Carhart's it is still unequal. We do know, however, that S. D. & H. W. Smith's Melodeons, sold by Horace Waters, 333 Broadway, are tuned in equal temperament.

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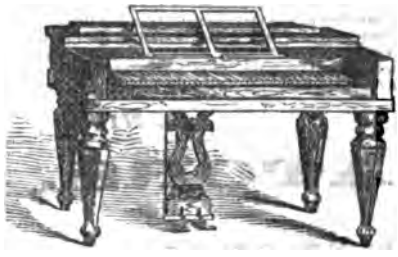

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3m-Nov. '54.

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OR,

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nd Complexion,

F ERADICATING OR CURING

and Face, Blotches, Sun Burns, Scalds, Burns, etc.

rtaining to the Skin.

, as also upon all roughness and exfoliations of the occasioned by cold, the PAPHIAN LOTION acts like m, soothing and healing the inflamed and abraded softening the indurated cuticle, and restoring lity and transparency.

The Nursery.

silence the peculiar adaptation of this the use of children and the purposes of ld be an act of unkindness to the d. As a wash for infants, it cannot mended. It promotes a healthy erficial vessels, so apt to become has a soothing, cooling effect itive skin. Being not only minently hygeian in its na- most delicate lady, or ap- with perfect confidence effect. It imparts a der skin, and protects influences.

ess and beauty er they have ure; and as prevented evening fy their blasts

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FOR THE PEOPLE

THE UNITED STATES MAGAZINE

Was commenced about *ten months* since, by the publishers of the UNITED STATES JOURNAL, [illegible] having over 100,000 *subscribers*, and probably half a million readers. All the immense [illegible] of the journal establishment was at once brought into force to make the magazine the [illegible] Periodical of America. When the first number appeared, so far was it superior to anything [illegible] before published at the price, that it was predicted on all hands that it must either be [illegible] in price or *surely fail*, that no such magazine could be sustained at the extraordinary low [illegible] One Dollar a year. At the same time the laudations of the press throughout the country [illegible] unbounded, complimentary notices flowing in upon us by thousands. Subscribers began to [illegible] in with a rapidity beyond our most sanguine expectations. The magazine has now reached [illegible] large circulation in every State and Territory of the Union, and throughout the British Provinces [illegible] and is rapidly increasing in every section of the country wherever it is known.

It is published monthly, each number having thirty-two beautiful three-column pages [illegible] sides the rich tinted covers, and illustrated frontispiece.

It has been embellished each month, thus far, with from eight to twelve elegant engravings [illegible] and we have now completed arrangements to largely increase that number, so that the number [illegible] during the year, from the present time, will contain nearly three hundred illustrations.

Among these, we have procured, at an immense cost, a series of over one hundred original designs, illustrating scenes and incidents in American history. At least two of these will [illegible] appear in each number, accompanied with interesting and thrilling sketches connected [illegible]

It will, also, be embellished each month with two, or more, beautifully engraved portraits of distinguished individuals, and biographical sketches. These will include the most [illegible] politicians, eminent statesmen, distinguished divines, etc., thus associating the exciting events of the day, with the history and countenances of the principal actors therein.

We have now in process of execution by the best artists in the country, a set of beautiful engravings to illustrate a series of mechanical articles which will be commenced in the May number, and be continued probably throughout the year.

We shall also commence in the same number a series of articles on the subject of Popular Education, the first of which will be accompanied with elegantly engraved views of the New Academy and public school buildings of New-York. These are entirely new, being the first of the kind ever published in America.

It also contains from time to time, views of cities, public buildings, scenery, costumes, flowers, agriculture, natural history, illustrations of interesting poems, etc., etc., to which is added each month, a page of wit and humor, from "Democritus, Jr.," the Laughing Philosopher, with his comical "pictera."

Although it is our object to give the magazine a practical and instructive character, rather than a light, imaginative and sentimental, yet we intend that it shall always wear a smile that will make it attractive to all. Many of its articles are original, and from the ablest pens in the country; while the editorial talent bestowed upon it is unsurpassed by that of any publication in America.

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FLORAL BEAUTIFIER,

INFALLIBLE AS A PRESERVATIVE OF

The Skin and Complexion,

AND AS A MEANS OF ERADICATING OR CURING

Freckles, Tan, Pimples, Chapped Hands, Lips, and Face, Blotches, Sun Burns, Scalds, Burns, etc. and all Diseases appertaining to the Skin.

Phalon's Paphian Lotion.

The most brilliant addition to the toilet which the present age has witnessed, was the fortunate discovery of a distinguished physician and Orientalist, who obtained the knowledge of its ingredients, and the method of combining them, while traveling in India. The receipt or secret was purchased for $2,500 by EDWARD PHALON, who, in the course of a long series of experiments, has so enriched, improved, and perfected the preparation, as to insure its reception as an indispensable and unequaled article for the toilet throughout the civilized world.

To describe,

or even to enumerate, all the instances in which this peerless beautifier may be recommended as an unfailing specific, would occupy a volume; suffice it to state, that among its most important properties, is the power to improve a harsh, pallid, bronzed, mottled, or otherwise repulsive COMPLEXION, and to substitute the fascination of a delicate and dazzling white, alternating with a roseate bloom. Perhaps the blush that beautifies the inner surface of an ocean shell, will give the best idea of the rich transparent tint which it imparts to the cheeks, while no pearl can surpass the exquisite fairness which it confers upon the neck, hands, and arms.

Its Efficacy

in counteracting all injurious effects arising from exposure to the weather and change of climate, would be deemed incredible if it were not authenticated by the highest testimony. Neither the freezing blast of the north, nor the blazing heat of the south can destroy or impair the beauty of a complexion protected by the regular application of the PAPHIAN LOTION.

Fair Complexions

are always peculiarly susceptible of inflammatory influences. Over exertion in warm weather frequently produces those unpleasant and irritating eruptions known as rose-rash, nettle-rash, and prickly heat, on the face, neck, and arms of the most beautiful blonde, and if not promptly attended to, may leave a permanent blemish behind. The cooling, healing, and balmy effect of the PAPHIAN LOTION is truly wonderful in cases of this kind. It does not drive in the eruption, but gives activity to the porous system, and causes the inflammatory principle or virus to exhale by insensible evaporation.

Ladies,

who, while nursing, suffer from sore or inflamed nipples, will find immediate and unfailing relief from the use of the PAPHIAN LOTION, which, from its extraordinary power to allay irritation and cool the mouth, may be truly said to render pleasing and painless, both to mother and babe, the most delightful task imposed by maternal duty. It is not, therefore, to be considered one of the mere conventional appendages of the nursery, but as an article of the first necessity in that department, and one that no wise and prudent mother will omit from her list of indispensables for her infant and herself.

Chapped Hands and Lips.

One of the most painful consequences of severe weather to ladies and children, is the chapping or cracking of the skin of the hands. It is a painful and annoying drawback to the amusements of the gay winter season, interfering with the enjoyment of many a sleigh-ride, and marring the pleasure of many a social evening by the excessive irritation which it occasions. Upon chapped, as also upon all roughness and exfoliations of the skin, occasioned by cold, the PAPHIAN LOTION acts like a charm, soothing and healing the inflamed and abraded surfaces, softening the indurated cuticle, and restoring its flexibility and transparency.

The Nursery.

To pass over in silence the peculiar adaptation of this balsamic fluid to the use of children and the purposes of the nursery, would be an act of unkindness to the mothers of our land. As a wash for infants, it cannot be too highly recommended. It promotes a healthy tone in the minute superficial vessels, so apt to become torpid in infancy; and has a soothing, cooling effect upon the tender and sensitive skin. Being not only perfectly innocuous, but eminently hygeian in its nature, it may be used by the most delicate lady, or applied to the most feeble child, with perfect confidence in its harmlessness and salutary effect. It imparts a silky texture to the young and tender skin, and protects it against detriment from external influences.

It is better,

however, to preserve intact the smoothness and beauty of the skin, than to reproduce them after they have been partially destroyed by a low temperature; and as the chapping of the hands may be effectually prevented by the use of the Lotion at the morning and evening toilet, it is desirable that ladies should thus fortify their delicate fingers in advance against the trenchant blasts of winter.

To Gentlemen

who suffer from tenderness and smarting of the face after shaving, PHALON'S PAPHIAN LOTION will prove a most welcome addition to the comforts and luxuries of the toilet; as it alleviates the irritation and pain, and renders the shaven surface soft and pliable.

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I HAVE analyzed the "Paphian Lotion" used for beautifying the complexion, manufactured by Mr. Phalon, and find it to be a harmless preparation, and not in any way injurious to the skin.

I believe it will be found serviceable for the purposes it is intended. JAMES R. CHILTON,

To EDWARD PHALON, Esq., } Chemist,
NEW YORK, *Dec.* 19*th*, 1853. } 87 Chambers-st

LETTER FROM MADAME ANNE THILLON.

TO EDWARD PHALON, Esq.—*Dear Sir*:—If you think my opinion of your "Paphian Lotion" will have any weight with the public, it is, I am sure, very much at your service; I have used the preparation for some months past, and find it infinitely the most efficacious and agreeable cosmetic that has ever graced my toilet.

It unquestionably softens and improves the texture of the skin, and adds to the brilliancy and clearness of the complexion.

I can not be mistaken on these points, as by its timely application I have repeatedly removed such blemishes as are occasioned by sudden changes of the weather, to which I am particularly sensitive. It is not often that so-called "aids to beauty" advertised to the world as infallible fulfill even partially their object, but your "Lotion," so far as I am capable of judging, is really what it purports, and I cordially recommend it to all ladies who value a clear, unclouded complexion, or desire to be protected against those annoying affections of the skin consequent upon the extremes of heat and cold. I am, Sir, yours truly, ANNE THILLON.

METROPOLITAN HOTEL, *Dec.* 5*th*, 1853.

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This work comprises the personal adventures of the author in the Pacific, which extend over a period of [illegible] divided into Three Parts, to which is subjoined a valuable and interesting Appendix.

Part I., which may be regarded as introductory to the narrative that follows, records a six months' experience [illegible] American whaler, in relating which, the details of ship duty, usually uninteresting, have been studiously avoided, [illegible] combination of incidents, serious and humorous, presented in an attractive form, imparts an air of freshness to [illegible] scenes shadowed of the forecastle.

Parts II. and III., containing the more material subjects of this narrative, give a graphic description of a [illegible] at the Sandwich, the Georgian and Society Islands. Glowing descriptions of romantic scenery, rambles through [illegible] yachting among isles, coralline reefs and lagoons, evergreen valleys, snow-capped mountains and volcanoes [illegible] in imagination, the reader to the azure skies and sweet-scented gales of the tropics. Points of character have been [illegible] in bold outline, and the lights and shadows of Polynesian life are vividly portrayed; embracing the [illegible] natives, their battles, mythology, and all the more prominent features of semi-barbaric life. An interesting chapter [illegible] sions has also been appended, and though the whole affair is presented in a fascinating dress, it will be found [illegible] sentiment and diction. It is believed, therefore, that in connection with the Appendix and Illustrations, it will prove a [illegible] able addition to our literature of the Pacific.

With respect to the Appendix, its first portion is "A Glance at the Present Condition of Polynesia," [illegible] cise form, the geography and classification of groups—their structure—natural productions—population—physical appearance and intellectual capacity of the natives—their habits and language—government and social condition—relations and intercourse with the civilized world, and steam navigation of the Pacific—in short, every thing of interest pertaining to the [illegible] Oceanica.

Appendix II., "The Island Kingdom of the North Pacific," is a comprehensive glance at the geography, [illegible] commerce of the Sandwich Islands, including elaborate statistics of their imports, exports, revenue, [illegible] subject of their annexation to the United States has been considered.

Appendix III., "The French in the Pacific," commences with the conquest of the Marquesas Islands, by [illegible] in 1842, including an account of the occupation of the Georgian, Gambier, Paumotu, and Wallis Islands, also [illegible] New Caledonia in 1853. This relates chiefly to the Tahitian Islands, the capital of the French possessions [illegible] ing the illiberal policy manifested by that nation in its relations with natives and foreigners, more [illegible] sion, since the dethronement of Queen Pomare in 1843. It includes the Port and Police Regulations of Tahiti; [illegible] the Naval and Land forces, and public improvements. An allusion is also made to the decline of the [illegible] of these Islands, since the establishment of the Protectorate, as evidenced by comparing the former with the [illegible] of their resources.

Appendix IV., "American Whaling Interests in the Pacific," includes valuable statistics pertaining to this [illegible] branch of our commerce. Whaling is classified and cruising grounds are described; reference is also made to the [illegible] this fleet to that of our merchant marine, and to the condition of American seamen in this ocean, their relations to [illegible] and consuls, and their wants.

In illustration of the above, it will contain a Map of the Sandwich, and one of the Georgian and Society Islands, also twelve [illegible] elegant tinted engravings of scenery in the South Seas, in the execution of which, artistic merit, and a faithful adherence to the original views taken by the author on the spot, have been equally sought.

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ing comprises a portion of their stock, and are all of fine growth, viz:
in over 400 varieties, both standards on their own stock for orchard culture, and on the quince for dwarfs, pyramids,
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WM. McFARLAND & CO.

NEW YORK, Aug. 23, 185[illegible]

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THE MOTHER'S MAGAZINE AND FAMILY MONITOR FOR 1854.

IN entering upon their twenty-first volume, the conductors of this Magazine tender their thanks to their numerous patrons for their generous co-operation. This is the oldest and most extensively circulated work of the kind in this or any other country. It is designed to be a medium of instruction on the subject of home education, to furnish matter of highest interest and profit to all the members of the family circle, and especially to aid the Christian mother to train up her child "in the way he should go," maintaining evangelical religious principles as the basis of its teachings.

As this Magazine receives its articles, almost without exception, *original* from the pen of our best writers, it has, as it deserves, a merit and standing above other periodicals made up of selections.

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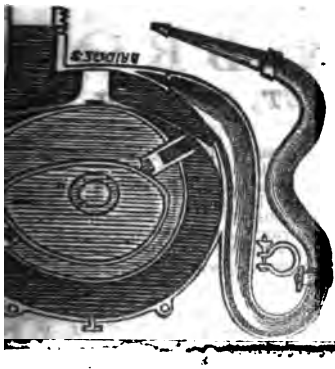

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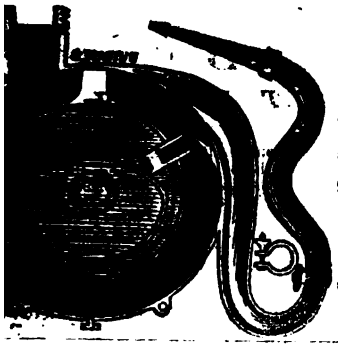

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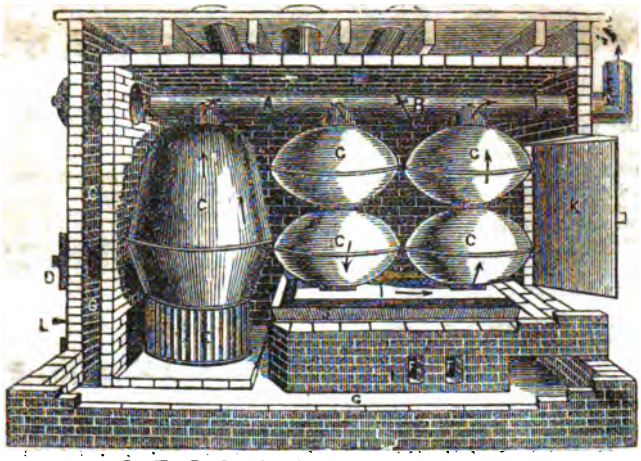

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Every package is branded with the name of the Sole Agent and is guaranteed.

Apply to H. N. FRYATT, Sole Agent, 161 Water Street, New-York City.

Aug. 7. tf.

Sewing Machines!!

THE attention of the public is respectfully invited to the SUPERB Sewing Mach offered for sale at the

OFFICE OF THE AVERY SEWING MACHINE COMPANY.

It has been our aim to adapt our Machines to the particular uses for which we them. The superiority of our Machines, built with this view, will be readily appreci those who have bought other machines warranted to do all kinds of work. We have spa pains or expense to improve our Machines and render them perfect.

We now offer, to those in want of Sewing Machines, a full assortment of all varieties

THE TWO NEEDLE MACHINE

GREATLY IMPROVED,

the Patent of which has recently been purchased by the French Government, and is extensively employed by them in the manufacture of Army and Navy clothing. This Machine received the *First Premium* from the Committee of the New York Crystal Palace, on account of the great strength and beauty of its stitch.

Of SHUTTLE MACHINES we have several kinds, built with particular reference to simplicity and facility of operation.

Our No. 1. is a large and very strong machine, adapted to Heavy Leather work, and is much esteemed by

SADDLERS, HARNESS MAKERS, BOOT AND SHOE FITTERS, &c.

No. 2 is a medium size for Tailors and Families. It works with equal *facility* on thick or thin fabrics, and cannot fail to give perfect satisfaction.

We have other styles fitted expressly for particular uses.

Price of Machines from $40 to $100.

All who want Sewing Machines will find it for their interest to call at the

OFFICE OF THE AVERY SEWING MACHINE CO.

No. 351 BROADWAY,

Jan. 6 mos. Opposite the Park, NEW-YORK.

J. & C. FISCHER

MANUFACTURERS OF

FRENCH GRAND ACTION

PIANO-FORTES,

ALSO,

ÆOLIAN PIANO-FORTES, WITH PATENT TUNABLE REEDS,

MANUFACTORY AND WAREROOM,

Nos. 243, 245, 247 & 249 West 28th Street,

Between 9th and 10th Avenues, NEW-YORK.

J. & C. FISCHER'S PIANO-FORTES have the TUBE, (which is supported on centres,) the METALLIC PLATES, the REVERSED BRIDGE, and all modern Improvements; and for *firmness, durability*, and KEEPING IN TUNE, are unsurpassed. They are made of thoroughly seasoned materials—under their own immediate supervision, and warranted to stand any climate.

N. B.—Piano-Fortes Repaired, Tuned, and taken in Exchange. Oct.

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AWARDED FIRST PREMIUM

BY THE

AMERICAN INSTITUTE

In 1846—1848—1849—1850—1852 and 1853,

193 *FRONT STREET, N. Y.*

WHERE may be found a complete assortment of Agricultural Implements, embracing all the new and most approved styles. Ploughs, of every description, among which are

"MOORE'S CELEBRATED PREMIUM,"

"EAGLE," "PEACOCK," HALL'S STEEL AND BAR-SHARE, "MINOR, HORTON & Co's," "DIAMOND PATTERN, CENTRE DRAUGHT," &c., &c.

STRAW CUTTERS,—Patent Self Sharpening Straw Cutters, the best article in use; also "Hovey's," "Slaymaker's," Greene's," and a variety of other Cutters in general use.

Corn Shellers, Fanning Mills, Horse Powers Threshing Machines, Corn and Cob Mills, Rakes, Hoes, Shovels, Spades, Hay Forks, Manure Forks, &c., &c.,

GUANO, BONE DUST, PLASTER, SUPER PHOSPHATE OF LIME, &c.

Copper, Brass and Iron Wire Cloth.

All of which will be warranted to be of the best quality and sold at the lowest prices.

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CASH CAPITAL AND ACCUMULATION, $300,000.

00,000 DEPOSITED WITH THE COMPTROLLER OF THE STATE FOR THE SECURITY OF ALL POLICY HOLDERS.

Persons Insuring with this Company, will be entitled to their pro rata share of the dividends. The rates and principles adopted have stood the test of experience, and must secure, beyond contingency, the object for which the Insurance is effected,—immediate and permanent aid to the WIDOW and ORPHAN.

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Prospectuses' to be had at the office, gratis.

Agency for the Purchase and Sale of Improved Breeds of Animals.

CATTLE, SHEEP, SWINE, POULTRY, &c.,

Purchased to order and carefully shipped to any part of the United States, for which a reasonable commission will be charged. The following Stock can be furnished, viz.:

Thorough-bred Short Horn and Grade Cattle, Thorough-bred Alderney Cattle,
Do. Ayrshire Cattle, Do. Devons do.
Do. South Down Sheep, Do. Cotswold, Oxfordshire or Leicester Sheep,

Swine and Poultry, very fine, of different breeds. Also, Fine, well-broken Devon Working Oxen.

All letters post-paid will be promptly attended to. Address,

AARON CLEMENT,

Feb. 54 tf. **South Street, above 9th Street, Philadelphia.**

PRIVATE SALES.

FOR SALE.

MY FARM, upon which I reside, in the County of Prince William, adjoining the town of Brentsville, containing about 466 ACRES, and distant about 24 miles from the Orange and Alexandria Railroad. The Soil is improved red free stone, in a fine state of cultivation, a portion of it having lately had an application of fifty bushels of lime to the acre. This farm has upon it Timber sufficient for its support, is watered by the streams of Occoquan and Slaty Run, contains about 100 acres of the finest Meadow land, and possesses inexhaustible beds of the red and white free stone of the finest quality; also a Copper mine believed to be valuable. The improvements are a good DWELLING HOUSE, Kitchen, and all other necessary Out-Houses, including Granary and Ice-House; also an Apple Orchard, numbering about 175 young trees, and a Peach Orchard, of about 75 young trees of selected fruit, besides a number of other improved fruits. The location of the Dwelling is one of the handsomest and healthiest in the county. The proposed Railroad from Brook's Station, on the Potomac Road, to the junction of the Orange and Manassas Railroad, is supposed will run by Brentsville, which, when made, will render these quarries of free stone, as well as the copper mine, very valuable. Besides the inducements this property presents to the Agriculturalist and Capitalist, any person wishing to combine the pursuits of a profession with those of a farmer, this farm, from its proximity to the County Seat, offers peculiar advantages. The farm will admit of being divided into lots. I would be willing to exchange it for property in Alexandria or Washington City.

Dec. '24 tf. A. NICOL.

World's Fair, 1853, Three Prize Medals were awarded to.

GROVESTEEN & TRUSLOW,

505 BROADWAY,

ADJOINING ST. NICHOLAS HOTEL, NEW-YORK.

FOR THE BEST FRENCH GRAND ACTION

PIANO FORTES.

Buyers would do well to examine their splendid assortment of PIANO FORTES and, also, of MELODEONS, before purchasing elsewhere.

WRITING TABLES OF NEW CONSTRUCTION.

WALLING & HEDGES, No. 252 Ninth Avenue,

Are now manufacturing and offer for sale a new article in the furniture line, combining the desk, table and chair, unlike anything ever before offered to the public, being, when closed up, a fancy centre table, and when opened, a cushioned arm chair, with desk and writing materials complete, the opening or closing of which requires but one second. This unique piece of furniture must soon come into general use, as it is well adapted to the parlor, the sitting-room, library, office, school-rooms, court-rooms, council chambers, legislative halls, for students, reporters, &c. The examination of the article by a discerning public is particularly solicited. The trade supplied.

N. B.—Patent right secured. June, 1y.

To Pork and Beef Butchers, Private Families & Others.

P. P. DIDIER & BRO'S

IMPROVED SAUSAGE OR PIE MEAT CUTTER FOR 1854.

PATENT APPLIED FOR.

This celebrated Machine is warranted, with proper care and use, to cut or mince 4 lbs. of fine meat per minute, or 240 lbs. per hour,—not liable to get out of repair, and easily operated by a small boy. The simplicity of construction and the ease with which every part subject to wear may be replaced, serve to recommend this as the cheapest and most perfect machine ever invented. Being made entirely of Iron, (with one or two exceptions) renders it more durable than those usually made of wood, and much easier kept sweet and clean, and no warping or swelling when necessarily used, as is the case with others.

N. B.—One great objection to Meat Cutters is that the knives are stationary. In our machine the objection is obviated, as the knives can be taken out, cleaned and put back in a minute. The machine is regulated for cutting fine or coarse meat by putting in more or less knives.

It is warranted to cut Sausage or Pie Meat equal to any machine in the country, both as regards quantity and quality. Also, warranted to cut five times the amount, and of a better quality than any cutter at the price—Again, less complicated, more durable, requiring less power to operate it than any similar invention of the age.

The Maryland State Agricultural Fair, and the Maryland Mechanics' Institute, awarded this Machine a first-class premium in the years 1851, 1852, and 1853; and encomiums of the like flattering character from discriminating Judges have, on all occasions of competition, favored this useful article. Retail price, $5,50.

A first-rate article of Sausage Stuffer or Filler retail from $4, $4 50, $5, $5 50.

N. B.—Agricultural Implement Makers and Venders, Hardware Merchants and others, would do well to take this machine on sale, owing to its popularity, and the liberal discounts made to the trade. The article is bound to be in possession of every farmer and private family. We have in store and ready for the season, about 3000 Cutters, for which we solicit buyers, Wholesale and Retail.

Sept., 3mos P. P. DIDIER & BRO., No. 97 N. Paca Street, Baltimore, Md.

FIRST PREMIUM PIANO-FORTES.

WOODWARD & BROWN,

387 WASHINGTON STREET, BOSTON.

WOODWARD & BROWN were awarded the FIRST PREMIUM for their Pianos at the last Great Exhibition and Fair held in Boston by the Massachusetts Charitable Mechanics' Association. Their competitors being the most distinguished makers in America, including the late Mr. Jonas Chickering, President of the above Association, to whom was assigned the second premium.

W. B. also received the FIRST PREMIUM at the Worcester County Fair, held in the city of Worcester, over all competitors, thus incontestibly proving the great superiority of their Piano-fortes. They were also awarded the First Premium at the Maryland Institute Fair, held in Baltimore, in October last, which of itself is a sufficient guarantee to public favor. And in addition to all this, they have received numerous flattering testimonials from various Institutions, for the unrivaled excellence of Instruments manufactured and exhibited by them.

Encouraged by such opinions from the best judges in the country, and aided by *twenty years practical experience*, W. & B. confidently invite purchasers and dealers to inspect their stock before making selections. Every Instrument warranted to give perfect satisfaction, or the purchase money refunded.

☞ Second-hand Pianos taken in exchange.

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Jan., '55. 1t.

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PARKER & BROWNE, MANUFACTURERS,

Nos. 20 and 22 COMMERCE STREET,

Aug. 1 yr.) WHOLESALE AND RETAIL. (*Between Bedford and Bleecker Sts.*, NEW YORK.

S. R. PARKHURST'S

PATENT BURRING MACHINES.

The subscriber, who is the inventor of the ***BURRING MACHINES*** which are attached to Carding Machines, informs

WOOLLEN AND COTTON MANUFACTURERS

that he has increased facilities for manufacturing superior Burring Machines, and likewise for Second Breakers. In addition to which, manufacturers who prefer the metal cylinder, invented by J. L. Tuttle, may be supplied with them at short notice.

The subscriber is giving his personal attention to the manufacture of these Machines, which he has not done heretofore.

The legal right for building these Machines is in the subscriber.

Orders addressed to HAYES & REDFIELD, No. 90 Beaver Street, will meet with prompt attention.

S. R. PARKHURST.

New York, January 17, 1854. Feb. tf.

GWYNNE'S
PATENT REACTION PUMP

AND

GWYNNE'S PUMPING ENGINE.

PECULIARLY ADAPTED FOR THE USE OF

STEAMERS, VESSELS, MANUFACTORIES, PAPER MILLS, TAN-NERIES, DISTILLERIES, AND RAILROAD STATIONS, DRAINAGE, IRRIGATION, COFFER-DAMS, MINES, QUARRIES, DRY DOCKS AND FIRE ENGINES.

Sizes from 25 to 100,000 Gallons per Minute capacity

MANUFACTURED AT THE "ERA WORKS," BROOKLYN.

Office and Warehouse, 33 Broadway,

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WHEELER & WILSON MANUFACTURING COMPANY'S

SEWING MACHINE,

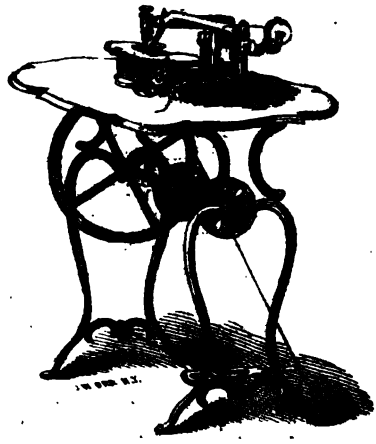
MANUFACTURED AT WATERTOWN, CONN.

OFFICE, 265 BROADWAY, NEW-YORK.

A. B. WILSON'S PATENT,

(*August* 12, 1851,)

AND JUNE 15, 1852



172 CHESTNUT ST., PHILAD'PHIA,

IRON HALL, WASHINGTON.

AGENCIES AT

68 COURT ST., BOSTON,

These Machines have been in successful operation, in the hands of manufacturers and milies for the past two years, and in every case have given universal satisfaction. The oprietors are now prepared to offer them to the public, with that increased confidence in eir merits which the united testimony of their numerous customers has strengthened and nfirmed.

These Machines are entirely different from any other, the principles on which they e made being *exclusively* our own.

Among the advantages of this Machine over any others are the following:—

1. The simplicity of its construction, and the ease with which it can be kept in the most erfect order.

2. The perfect manner with which the operator is enabled to stitch and sew the various inds of work, from the finest linen to the coarsest cloths.

3. It particularly excels in the rapidity with which work can be executed; in that espect it has no equal.

4. The little *power* required to propel them, enabling even those of the most delicate onstitution to use them without injury to their health.

We are now manufacturing a larger sized Machine, more particularly adapted to the sewing of leather, canvas bags, and the heavier kinds of cloths.

An examination of our Machines is respectfully solicited at our Office, 265 Broadway.

Feb. 1y.

HIGHLAND NURSERIES, NEWBURGH, N.

A. SAUL & Co.,

In inviting the attention of their patrons and the public in general to their very extensive collection

FRUIT AND ORNAMENTAL TREES, SHRUBS, &

Would respectfully inform them that the stock they offer for sale the coming Autumn is unusually fine, both in quality of trees, variety, of kinds, &c., &c.

The soil and climate of the Hudson Highlands have rendered proverbial the success of the trees sent from all parts of the Union, and the accuracy and precision so indispensable in the propagation of fruit trees for sale establishment has long been celebrated, render errors in nomenclature of rare occurrence.

They have propagated in large quantities all the leading standard varieties which are proved best adapted eral cultivation, especially those recommended by the American Pomological Society, as well as all novelties native and foreign origin.

To particularize within the limits of an advertisement would be impossible; they refer to their Catalogue, a copy of which will be sent to all post-paid applicants, on enclosing a Post Office stamp.

The following comprises a portion of their stock, and are all of fine growth, viz:

PEARS in over 400 varieties, both standards on their own stock for orchard culture, and on the quince for pyramids, and quenouille, for garden culture.

APPLES in over 300 varieties, both standards and dwarfs.

CHERRIES, both standards and dwarfs.

PLUM, APRICOT, PEACH, NECTARINE, and **QUINCE** trees, in every variety.

GRAPE VINES, both native and foreign for vineries. Also,

GOOSEBERRIES, (50 best Lancashire varieties,) **CURRANTS, RASPBERRY,** and **STRAWBERRY** plants, of all leading and known kinds, together with **SEA KALE, ASPARAGUS,** and **RHUBARB** roots.

ORNAMENTAL TREES, SHRUBS, and **VINES**, both deciduous and evergreen, suitable for avenue lawn planting, embracing all the new and rare conifers, weeping trees, and shrubs of recent introduction.

ROSES in every variety, including Hybrid Perpetual, Hybrid Bourbon, Hycrid China, Hybrid Bourset, Provence Bourssalt, Ayrshire, and other hardy climbing and garden varieties, as well as the more tender Tea, China, Noisette Bourbon, and Noisette varieties.

HERBACEOUS PLANTS.—A large collection of Pæonies, Phloxes, Campanuls, Pentstemon, Gladiolus, &c.

DAHLIAS and **BEDDING PLANTS**, for the parterre and flower garden, in large quantities and variety.

HEDGE PLANTS.—500,000 strong, 2 year old, Osage Orange, in three different sizes, at $6, $8, and $10 per 1000. Buck thorn plants, 2 years old, $8 per 1000.

Dealers and Planters of trees on a large scale will be dealt with on the most liberal terms. 6t 8

THE LIFE OF HORACE GREELEY,

Editor of the New-York Tribune. By J. Parton. Duodecimo, 450 pp. Illustrated. Price, $1.50

Neither with the conception or composition of this book, has Mr. Greeley had anything to do. The author says in his preface "I undertook the task, simply and solely, because I liked the man—because I had taken a warm interest in his career—because I thought the story of his life ought to be told." It is further stated in the preface, (and the publishers believe, in perfect truth,) that "nothing has been told or suppressed for the sake of making out a case." "The book," says the author, "is as true as I could make it."

In the preparation of this work, the author visited every place at which his hero resided, and compiled the account of his early life, which is very full and extremely interesting, from the narratives of his fellowmen, school-fellows, fellow apprentices, fellow journeymen, and others.

As a leading object of the work was to show how Horace Greeley came to be the man he is, the history is given of the origin of his opinions, political and religious, and as complete an account as possible of the wonderful development of his mind in untoward circumstances, and with the most restricted means. Mr. Greeley's arrival in New-York and his early residence here are circumstantially narrated. His *first lift* in life occurred in connection with the establishment of the first cheap daily paper, and the author has seized the opportunity to give, for the first time, a history of the idea, and of its origination. The subsequent chapters present, in more or less of detail,—Horace Greeley as an Editor, Poet, Author, and Public Speaker; Horace Greeley in Congress; Abroad; in his Finances; in Broadway; at Church; at Home; on his Farm, etc. One chapter contains a collection of his best Editorial Paragraphs; another, of his best Practical Suggestions; another describes the Routine of the Daily Press, in an account of the Tribune Office, by day and night. In a word, the publishers believe that the Life of Horace Greeley will be one of the most interesting, complete, and reliable Biographies that has ever appeared.

RUTH HALL:

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BY FANNY FERN.

12mo., cloth; about 460 pp. Price, $1,25.

No American author has achieved so brilliant a success as the lady whose writings over this name, though not two years have yet elapsed since the appearance of her first book, are already *familiar* wherever the English language is read. Heretofore she has given the world nothing but fugitive pieces, and her unparalleled success has been achieved in this the most difficult field of authorship. The work now announced is her first continuous tale, and affords full scope to her extraordinary powers. The story is one of intense interest, which will enlist the sympathy of every American, and may exert an important influence in a reform which *has no enemies. It is, we believe,* destined to make a sensation.

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Improved Fire and Burglar Proof Safe,

s undersigned would respectfully call the attention of
ublic to the above unequalled safeguard, proof against
vouring element of fire, as well as the most successful
ar.

Merchants, Jewellers and Bank Directors, we would
say, examine them, and the proofs, and you will be
need of their superiority over all others manufactured.
r business is done in a plain, straight-forward way,
>ut resorting to humbug or large talk.

low is one of the many testimonials we are daily receiv-
>om all parts of the country, and it speaks for itself.

ire. Pond & Hitchcock's Oil Store was situated directly
r the Pearl Street House, and was totally consumed
at great fire of Aug. 23d.

ur depot, where an assortment of all kinds and sizes
constantly on hand, is at 38 MAIDEN LANE,

2 doors from Nassau St., N. Y.

WM. McFARLAND & CO.

NEW-YORK, Aug. 23, 1858.

Messrs. McFarland & Co.:

GENTS:—It affords us pleasure to inform you that the Fire and Burglar Proof Safe we purchased of you, preserved our books and papers at the disastrous fire of the Pearl St. House, last evening, in the most perfect manner. Although it was covered throughout the fire, with burning Resin and other oils, and directly under a broken gas pipe, in the most intense heat, it remained true to its name, and its contents, when taken out, were not even scorched, and hardly bore the smell of fire. To any one in want of a superior Safe, a perfect safeguard against fire, we cheerfully recommend your manufacture, having had a personal experience of their excellence.

Yours truly,

POND & HITCHCOCK.

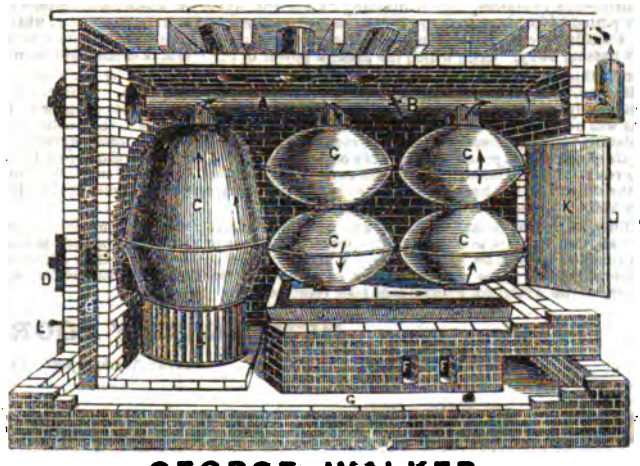
WAREHOUSES.

ston, Mass., No. 14 Blackstone Street.
timore, Md., No. 145 Platt Street.
icago, Ill., corner South Water and Franklin Sts.
Portland, Oregon, 37 Front Street.
San Francisco, Cal., 27 California Street.
Port Phillip, Australia, 19 West Street.

Agents.—Kendall, Richardson & Co., Bath, Me. Henry Butler, Bangor, and T. McFarland, Richmond, Me.

Jan. 1yr

Walker's Patent



Warming Furnace.

GEORGE WALKER,

WARMING AND VENTILATING WAREHOUSE,

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EMERSON'S PATENT CORRESPONDING SHIP VENTILATORS,

EMERSON'S PATENT HOUSE AND CAR VENTILATORS,

Pond's Improved Cooking Range. Dec. 1y.

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Mechanical and Architectural Drawings executed in all kinds of Perspective, with dispatch and at moderate prices. Office, Tryon Row, No 5, opposite City Hall. May 29—6f

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OF THE

"ARCHIVES OF THE PRESS"

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"When Tamerlane had finished building his pyramid of seventy thousand human skulls, and was encamped at the gate of Damascus glittering with steel, with his battle-axe on his shoulder, till his fierce heart filled on with victories and new carnage, the pale looker-on might have imagined that nature was in her death throes: for in and despair had taken possession of the earth, and the sun of manhood seemed setting in seas of blood. It might be on that very gala day of Tamerlane, a little boy was playing at ninepins in the streets of Mecca, whose tory was more important to man than twenty Tamerlanes! The Tartar Khan, with his shaggy demons of the derness, passed away like a whirlwind, to be forgotten forever. But that German artisan has wrought a which is yet immeasurably extending itself, and which will continue to expand, through all countries, and thro all time! What are the conquests and the expeditions of the whole corporation of captains, from Walter, the nilless, to Napoleon Bonaparte, compared with the movable types of Johannes Faust."

"Histories make men wise, and in proportion as men's minds are influenced by a love of their profession, we they feel a desire to become familiar with the most authentic accounts of its origin, and its advancement."

PRINTERS, busily engaged in recording the history, the progress, and the condition of all other occupa have too much neglected to chronicle the discovery and the advancement of their own "Art Preservative of Arts Why this silence? Modern inventions, invading the once secret precincts of "the Chapel," may have stripped craft of its once distinctive character, and in dividing its ancient mysteries, some have become purely mechanic yet at no previous period of its history has the Press received so universal a homage as now, when all recognize the power which stimulates civilization, and promotes social progress. Surely there is need of a copious record those "old things passing away," upon which the present power of the "fourth estate" has been reared.

An occupation of this almost uncultivated field is thought to be a desideratum by some of the most gifted ers in the Republic, and, by their advice, the subscriber ventures to take possession. A practical printer, he has ten years past diligently collected materials, and fitted up an office for the express purpose of publishing such illustrated work as will be agreeably instructive to the craft, and not unacceptable to the public. Authentic historic and biographical details will be interspersed with *fac-similes of early manuscripts, wood engravings, inks, and other newspapers;—prints of offices and presses;—portraits and autographs of eminent printers;*—all forming a rich mass of PICTORIAL HISTORY. Having patiently traversed every typographical locality of interest,—both in bygone and in the new—the subscriber has harvested and gleaned. Now, he proposes to garner the result of his researches, (divested of husks and chaff,) into the "*Archives of the Press.*"

For the first time, an appeal is made to those who generally receive "presentation copies," to subscribe, for it must be evident to all, that Printers must sustain the work. The cost of the work,—mailed in monthly numbers, or in a volume when completed,—will be *Five Dollars.* A list of the subscribers, with their addresses, will be appended, in the old style of issuing folios requiring large expenditure. Subscriptions, suggestions and facts connected with the local history of the American Press, thankfully received by

BEN: PERLEY POORE,

Jan., 1855. tf. [redacted] : *Near Newburyport, Massachusetts.*

THE ECLECTIC MAGAZINE.

THE ECLECTIC MAGAZINE OF FOREIGN LITERATURE, in literary merit and sterling worth, is without question the best magazine published. It is such, because it comprises, in moderate compass and convenient form, the excellences—the choicest articles—the cream, so to speak, of all the leading Foreign Quarterlies and Magazines, and the productions of their most gifted pens. In this respect, the Eclectic has a decided advantage over all other magazines. Omitting articles of mere local interest and minor importance to the American reader; its pages offer to its patrons a large amount of literary wealth, of permanent value, at a small price.

The Eclectic is published in monthly numbers of 144 pages each, making three large volumes a year, and nearly 1800 pages, richly embellished with twelve splendid portraits of distinguished persons or historical subjects. The price is $5 per year. The January number begins a new volume. Now is a good time to subscribe. Orders for the work are solicited. It will be sent promptly by mail to all who order it. Address

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☞ Sets of the work in 12 vols., for the last four years, neatly bound, lettered, and numbered, may be had at the office of publication, and sent to any part of the country.

Dec. 22nd, 1854.

W-YORK AND NEW-HAVEN RAILROAD.

Winter Arrangement, Dec. 11th, 1854-5.

ns Leave New-York—For New-Haven, 7, 8 A. ., 12 M.; 2, (Ex.,) 3 30, (Ex. and Ac.,) 4, P. M.; ageport, 7, 8 A. M., (Ex.,) 12 M., 3, (Ex.,) 3 30, (Ac. .,) 4 P. M.; for Milford, Stratford, Fairfield, South- d Westport, 7 A. M., 12 M., 3 30, 4 P. M.; for Nor- A. M., 12 M., 3, (Ex.) 3 30, (Ex. and Ac.,) 4, 5 15 for Darien and Greenwich, 7 A. M., 12 M., 4, 5 15 for Stamford, 7, 8 A. M., (Ex.,) 12 M., 3, (Ex.,) 15, 5 15 P. M.; for Port Chester and intermediate s, 7 A. M., 12 M., 4, 5 15, 6 18 P. M.

ecting Trains—For Boston, 8 A. M., (Ex..) 3 P. M.); for Hartford and Springfield, 3, (Ex.) 12 M., 3 P. M. (Ex.); for Connecticut River Railroad to Montreal, 3 A. M., (Ex.); for Canal Railroad, 8 A. M., (Ex.,) 12 M.; for New London Railroad, 8 A. M. 3 P. M.; for Housatonic Railroad, 8 A. M.; for Naugatuck Railroad, 7 A. M., 3 P. M., (Ex.); for Danbury and Norwalk Railroad, 7 A. M. 3. 30 P. M.

Trains to New-York—From New-Haven, 5 30, 7, 9 25 A. M., 1 15, (Ex.,) 4 15, 8 P. M., (Ex.,); from Bridgeport, 6 10, 7 42, 10 18 A. M., 1 52, (Ex.,) 4 56, 8 38 P. M., (Ex.); from Norwalk, 6, 6 44, 8 15, 10 52 A. M., 2 20, (Ex.,) 5 30, 9 06 P. M., (Ex.); from Port Chester, 5 30, 6 42, 7 28, 8 57, 11 38 A. M., 6 13 P. M.

JAMES H. HOYT, Superintendant.

NEW-YORK AND ERIE RAILROAD.

and after MONDAY, December 25th, and until r notice, Passenger Trains will leave Pier foot of e Street, as follows, viz:

hio Express, at 7 A. M., for Buffalo.

dnirk Express, at 7 A. M., for Dunkirk.

ail, at 8 15 A. M., for Dunkirk and Buffalo and inter- ate stations.

okland Passenger, at 2 30 P. M., (from foot of Cham- Street.) via Piermont, for Suffern and intermediate ons.

Newburg Express, at 4 P. M., for Newburg.

Way Passenger, at 4 P. M.: for Otisville and inter- mediate stations.

Night Express, at 5 P. M., for Dunkirk and Buffalo.

Emigrant, at 5 P. M., for Dunkirk, Buffalo and inter- mediate stations.

On Sunday only one Express Train, at 5 P. M.

These Express Trains connect at Buffalo and Dunkirk with the Lake Shore Railroad for Cleveland, Cincinnati, Toledo, Detroit, Chicago, &c.

D. C. McCALLUM, General Superintendent.

BALTIMORE AND OHIO RAILROAD.

Improved Arrangements for Travel! Important Changes of Schedule!

he late completion of the Central Ohio Railroad be- Wheeling and Columbus, uniting, as it does, by short and direct a line, the Baltimore and Ohio Rail- d with all portions of the West (and North and South- st) gives this route greatly increased advantages to ough travellers in that direction. On and after MON- Y, November 27th, 1854, the trains will be run as lows:—

FOR THROUGH PASSENGERS.—Two fast trains, ily, will run in each direction. First—the MAIL AIN, leaving Camden Station at 7 A. M., instead of o'clock as heretofore, (except on Sundays,) and arriving Wheeling at 2.40 A. M. Second—the EXPRESS AIN leaving at 5 P. M., instead of at 7 P. M., as here- fore, and running through to Wheeling in about 17 rs, reaching there at 10.35 A. M. This train will stop Washington Junction, Sykesville, Monocacy, Harper's ry, Martinsburg, Sir John's Run, Cumberland, Pied- nt, Rowlesburgh, Newburgh, Fetterman, Farmington, ineron and Moundsville only, for wood and water, and als. Both these trains make prompt and regular con- ection with the cars of the Central Ohio Railroad for ambridge, Zanesville, Newark, Columbus, Cincinnati, ouisville, Dayton, Sandusky, Toledo, Detroit, Indian- polis, Chicago, St. Louis, etc. Passengers leaving Bal- more by the Mail Train, will reach Cincinnati for din- er next day, while by the Express Train they arrive here at 12 the next night, being kept but one night on he route by either train.

Passengers for the Northwest via Cleveland and all intermediate points, can make a direct connection with he trains upon the Cleveland and Pittsburg Railroad at ll times when the Ohio is navigable for steamers be- ween Wheeling and Wellsville, by leaving Baltimore in he Mail Train at 7 A. M.

Returning, the trains leave Wheeling as follows:—The EXPRESS TRAIN at 12.0 P. M., reaching Baltimore at 9.50 A. M. The MAIL TRAIN at 11.45 P. M., reaching Baltimore at 7 P. M.

☞ Through tickets by boat from Wheeling for Cincinnati, Madison, Louisville, St. Louis and other River Cities, will be sold at all times when the stage of water will admit.

☞ Through tickets between Baltimore and Washington, and all the important cities and towns in the West are sold at the Ticket Offices of the Company.

FOR WAY PASSENGERS.—THE MAIL TRAIN, leaving Camden Station, will take passengers for all the principal stopping places on the road. Returning, this train leaves Wheeling at 11.45 midnight, Cumberland at 10.15 A. M., and arrives at Baltimore at 7 P. M.

THE FREDERICK ACCOMMODATION TRAIN, for Frederick and intermediate places, will start at 4 P. M., daily, (except Sundays) arriving in Frederick at 7.40. Returning, will leave Frederick at 9 A. M., arriving at Baltimore at 12 30 noon.

THE ELLICOTT'S MILLS ACCOMMODATION TRAIN will be run daily, (except Sundays) as follows:—

Leave Camden Station at 6 A. M. and 3 P. M.

Leave Ellicott's Mills at 7.30 A. M. and 6.30 P. M.

FOR WASHINGTON, D. C.—Trains leave Baltimore for Washington at 4.15 and 9 A. M., 5 and 8 P. M.

On Sundays at 4.30 A. M. and 5 P. M. only.

Leaves Washington for Baltimore at 6 and 9.30 A. M., and 3 and 5 P. M.

On Sundays at 6 A. M., and 5 P. M. only.

The first and fourth trains from Baltimore, and the second and fourth trains from Washington will be Express Mail Trains, stopping only at Washington Junction and Annapolis Junction.

For tickets, information, &c., &c., apply to J. T. ENGLAND, Agent, at the Ticket office, Camden Station.

JOHN H. DONE, Master of Transportation, Baltimore.

HUDSON RIVER RAILROAD.

WINTER ARRANGEMENT.

On and after MONDAY, Nov. 30th, the Trains will leave Chambers St. Station, as follows:—

Express Train, 7 A. M., connecting with Northern and Western Trains.

Mail Train, 9 A. M., Through Way Train. 12 M.

For Poughkeepsie: Way Passenger Trains at 7 15 and 10 30 A. M.

For Peekskill at 3, 4 and 5 30 P. M.

For Tarrytown at 1 and 6 P. M.

The Tarrytown, Peekskill and Poughkeepsie trains stop at all the Way Stations.

Passengers taken at Chambers, Canal, Jane, 14th and 31st Streets.

SUNDAY MAIL TRAIN at 9 A. M., from Albany for Albany, stopping at all Way Stations.

BALTIMORE LINES.

PHILADELPHIA, WILMINGTON & BALTIMORE RAILROAD.

PASSENGER TRAINS LEAVE PHILADELPHIA for BALTIMORE at 8.30, A.M. (12.45, and 3, P.M. Express,) and 11 P.M.

For WILMINGTON at 8.30, A. M., 12.45, 3, 4.30, and 11 P. M.

For NEW CASTLE at 8.30, A.M., 12.45, and 4.30 P.M.

TRAINS FOR PHILADELPHIA.

Leave BALTIMORE at (8.30, Express,) 11, A.M., 5.30 and 3 P. M.

Leave WILMINGTON at 7.45, 11.15, A.M., 2.15 and 12 P. M.

Leave NEW CASTLE at 7.30, 10.45, A.M., 1 P.M.

BALTIMORE AND HAVRE DE GRACE ACCOMMODATION TRAIN.

Leaves HAVRE DE GRACE at 8 A.M.

Leaves BALTIMORE at 3 P. M.

S. L. SHAFFORD, General Superintendent.

HARLEM RAILROAD.—INLAND ROUTE.

On and after Monday, Dec. 11, Sundays excepted, for Albany and Troy.

LEAVING DEPOT COR. WHITE & CENTRE STS.

Mail Train at 7.30 A.M., stopping at Williams' Bridge and Mail Stations North.

Way Express 3.00 P.M., stopping at White Plains, Newcastle, Croton Falls, and stations North, connecting at Chatham Four Corners with Western Railroad Express Train, arriving at Albany at 11 P.M.

Passengers may also procure Tickets, and have their baggage checked for Utica, Buffalo, and other places West and North of Albany, at the Company's Offices, corner of Bowery and Broome st., and Fourth Av. and 29th st.

RETURNING TO NEW-YORK.

Mail Train leaving Chatham Four Corners at 6 A.M. stopping at all Mail Stations above Williams' Bridge, arriving at New-York at 12.45 P.M.

Leaving Depot Western Railroad, corner of Hudson Lane and Dean st.

Express Train, leaves Troy at 2.30 P.M., and Albany 2.45 P.M., stopping at Chatham Four Corners, Pittsfield, Martindale, Hillsdale, Copake, Millerton, Amenia, Wassaic, Dover Plains, South Dover, Pawling, Sharon, Townsend, Brewster, Croton Falls, White Plains, and Williams' Bridge. Passengers by this train will not be taken between Croton Falls and Williams' Bridge, unless coming from above Croton Falls. Passengers between Croton Falls and Williams' Bridge must take the Express Train, leaving Croton Falls at 3 P.M.

Freight for Albany received daily, until 4 P.M. at the Depot, corner of Centre and White sts.

JOHN D. ELLIOTT, SUPERINTENDENT.

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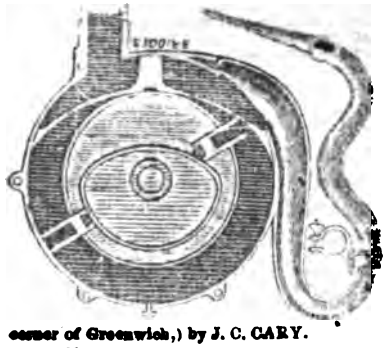

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ngth of Jeffrey and Macaulay. The biting sarcasm of Mrs. Cope, when roasting
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